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A.M.A. SESSION—San Francisco—JUNE 13-17, 1938

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CERTAIN SIGNIFICANT ASPECTS OF CHILDHOOD TUBERCULOSIS

CHAIRMAN'S ADDRESS

RALPH M. TYSON, M.D.

PHILADELPHIA

No other communicable disease equals tuberculosis in the taking of human lives. It probably exceeds all other diseases in individual and social importance, not so much from what it does to the child during the first infection but because of what it means to that individual during and after adolescence, when reinfection occurs. In a paper such as this it is impossible to consider all the many problems of childhood tuberculosis. A few of these problems will be discussed. The pathology of a first infection and the source of most reinfections are more clearly understood now than ever before. Just what constitutes resistance to the infection and how an individual develops immunity are controversial subjects at present. Early diagnostic signs are very indefinite and frequently missed, until there is evidence of extension of the disease. Much has been accomplished with regard to the cure of the disease, but more needs to be done along the line of prevention. Special attention needs to be given to preventing reinfections. It is because of these significant aspects of tuberculosis that I have selected this subject for my address as chairman of the Section on Pediatrics. I do so without any claim for original work or ideas regarding tuberculosis. It is merely an attempt to summarize the ideas of others and to emphasize these few particular phases of the condition. I want to stress especially the need for a more general use of the tuberculin test in order that the first infection cases can be found and the patient guarded against reinfection. A survey of the pediatric cases admitted to our children's ward during the past five years shows an incidence of positive Mantoux tests of 20 per cent.

EARLY PATHOLOGY

At the present time it is believed that most tuberculous infections are air borne and gain entrance into the human body by way of the pulmonary structures. Pasteurization and boiling of milk have practically eliminated the gastro-intestinal tract as a portal of entry.

After the tubercle bacilli are inhaled, they usually lodge in that part of the respiratory tract which is free from cilia; that is, the terminal bronchioles and alveoli. These organisms act very similarly to particles of dust and are, to a large extent, inert foreign substances which fail to produce any obvious clinical signs or symptoms. However, according to Fried, the respiratory epithelium of these areas so involved responds within a very few minutes. The response is a change in the epithelial cells and is essentially an intra-alveolar lesion. Some of the tubercle bacilli remain entrapped exclusively within the intra-alveolar lesions. Others of these organisms, however, are carried by phagocytic cells through the walls of the air sacs, along lymphatic channels, and usually lodge in the regionally located lymph nodes. Undoubtedly in some cases the organisms are immured for life in these various areas of the lung tissue.

The size of the dose of the infecting organisms and the multiplicity of its repetition and the amount of the local tissue resistance are all determining factors in the spread of the disease. Wherever the organisms lodge they form the typical miliary tubercles and may proceed through the several stages of fibrosis, calcification or dissemination. Because in the young child the lymph channels are almost completely uninterrupted, tubercle bacilli are more apt to pass rapidly toward regional and distant lymph nodes. The lymph nodes themselves in the young child are poor filters; hence some of the organisms pass through them and may eventually reach the blood stream for generalized distribution of the infection. The less pervious pulmonary lymphatic system of the adult causes arrest of the bacilli out in the lung and the tuberculous focus develops at the point of this arrest.

This early pathologic condition is commonly spoken of as a primary complex and consists of the area of first penetration of the pulmonary structures, the lymphangitis along the pathways, and the lymph adenitis. The dissolution of the lipoid capsule of the tubercle bacillus permits of the liberation of tuberculoprotein. It is with the liberation of this substance that the tissues of the patient are sensitized and clinical symptoms are more apt to be recognized. Positive tuberculin tests may be secured at the end of this period, which may have lasted from three to six weeks. This early pathologic condition constitutes the first chapter in the life history of the organism in the human body and is frequently spoken of as a tuberculous infection rather than a tuberculous disease. The distinction is hardly justifiable. The time between the primary and reinfection types of tuberculosis may extend from a few months to many years. Usually the first chapter in this history ends with securing a positive tuberculin test, without palpably evident clinical, pathologic or x-ray changes. Clinical signs are most indefinite during this period.

One of the most animated controversies in tuberculosis work has been over the origin of reinfection, whether endogenous or exogenous in nature. A post-primary clinical tuberculosis constitutes the second chapter in the history of the disease. During this stage there is usually definite clinical, pathologic and x-ray evidence of reinfection and expansion. Evidence is

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accumulating which seems to show that reinfections are the result of an exacerbation of a primary infection caused by the rupture of a lymph node or parenchymal tubercle into a new lymph node, a bronchus, the blood or lymph streams. Such endogenous reinfections resulting from softening of caseous nodules, the enormous reproduction of bacilli in the several forms of their development, and their subsequent rupture, have been emphasized by Long as the key problem in tuberculosis.

The best known stage of tuberculosis represents the third chapter in its life history. This is the very active stage of the disease and most often occurs when the child is no longer a child. It is known to exist in the very young infant and may involve nearly any organ of the body.

RESISTANCE AND IMMUNITY

What happens to the young child infected for the first time by the tubercle bacillus depends on a number of factors. Very probably the greatest of all is the degree of natural immunity of the child's own tissues first involved. The degree of acquired immunity which the localization sets up and the amount of allergic tissue hypersusceptibility resulting from this first localization are important points.

The relatively higher incidence of deaths from tuberculosis among young infants than in following age groups has given rise to the idea that babies resist the disease more poorly than older children and adults do. There is some question about the interpretation of that statement. A small infant has less opportunity of evading repeated and massive doses of living bacilli than does the older child and adult. Very probably it is the repetition of infections of young infants that has much to do with their supposedly increased susceptibility to the organisms. Their uninterrupted lymphatic channels permit a wider spread of tubercle bacilli. The more massive and widespread the dose received by the infant, the greater the amount of tuberculoprotein liberated when the bacilli disintegrate.

One cannot, however, entirely eliminate the influence of personal and public hygiene on the effects of tuberculosis. It has been known that native Indians, Negroes, the epileptic and the schizophrenic seem to be more susceptible to tuberculosis than other individuals. The question as to whether it is racial and connected with certain genetic properties or a matter of poor personal hygiene is not definitely proved. Undoubtedly poor hygiene plays a very important part in resistance to the tubercle bacillus. Resistance, however, is something which no one can estimate with any definiteness, and yet the degree of resistance to tuberculous toxins determines in a large measure the result of treatment. Whether the resistance of some patients and the lack of resistance of other patients is due to the quality of certain tissue cells and fluids, on the one hand, or to the lack of these certain qualities, on the other, is a matter that is difficult to state. There is no doubt that there is a specific resistance to tuberculosis, and no two children have this quality in the same degree.

The question of whether the primary infection is an asset or a liability is contested very earnestly by several groups of workers. Those who feel that it is an asset lean toward the belief that the use of the BCG vaccine is justifiable. Several of these investigators with cows, calves, guinea-pigs and rabbits state that those animals which have been given the vaccine and after a certain length of time are given virulent doses of tubercle bacilli have certain resistance to throw off the reinfection, provided they develop a positive tuberculin test, while those animals which have a negative tuberculin test and are given virulent tubercle bacilli usually die within sixty days. Stewart, Myers and others believe that a negative Mantoux test is superior to a positive reaction from the standpoint of resistance to infection. They believe that any nonallergic, uncontaminated person occupies a more advantageous position than is possessed by an allergic person, so far as future experiences with the tubercle bacilli are concerned.

EARLY DIAGNOSTIC SIGNS

It is the hope of all who deal with children that a diagnosis of tuberculosis might be made during the first chapter of the life history of the tubercle bacillus. It has only been recently that these early diagnoses have been made, as emphasized by Wallgren. Because of the importance of this particular phase of our problem, it seems well to have a definite diagnostic plan that will lead us to proper conclusions.

Exposure.—A history of exposure and the finding of an active tuberculous lesion in a parent or other individual who comes in contact with children makes the problem a simple one. Such a history is not always available, however, and other means must be used.

Weight Curve.—The weight curve of the child is not always a reliable guide. This is especially true of the small infant. It has been the experience of many to see a young infant with an active tuberculous infection continue to gain in weight during the early part of that condition. Due consideration must be given to stationary or perhaps loss of weight without any obvious cause.

General Condition.—A change in the general condition of the child, with the appearance of such indefinite symptoms as irritability, fretfulness, fatigue and lack of appetite, are helpful diagnostic points. It must be remembered, however, that these symptoms may be due to many other causes.

Fever.—Elevation of temperature, while not specific by any means, should always be regarded with suspicion. So far as is known at present there is no specific temperature curve associated with tuberculosis. When no adequate cause for the elevation of temperature can be elicited by careful physical examination, suspicion should always be directed toward the possibility of tuberculosis.

Later Signs.—When a tuberculous infection has gone through the first chapter and reinfections have occurred, with resulting increase in toxemia, there are sometimes left indefinite but helpful diagnostic marks on the child. I refer particularly to the rather lusterless eye, the heavy long eyelashes, pouty lips, dry skin and hair, and hypertrichosis. These changes are evidence of toxemia of the disease.

Tuberculin Tests.—Tuberculin tests should be made in all suspected cases, particularly if one or more of the aforementioned circumstances exists. The intradermal or Mantoux test, beginning with 1 : 10,000 dilution and repeating with ascending doses, will show allergic response within three to six weeks after the primary infection has occurred. It has been the experience of most physicians that this is an extremely valuable test and perhaps should be performed on all children who come under our care.

Serial X-Ray Studies.—Serial x-ray studies of the chest have helped greatly from the diagnostic standpoint and are of far more value than a single x-ray

study. Such diagnostic aid should be used whenever positive skin tests are obtained. It is very difficult for the roentgenologist to tell positively whether the shadows found on a film of a certain infant's chest are due to tuberculosis or to some other pulmonary infection.

Gastric Lavage.—Comment is frequently heard as to the inability of small infants to raise sputum into the mouth. Most of the time it reaches only the pharynx and is immediately swallowed. If gastric lavage is done the first thing in the morning and careful study made of sediment so secured, tubercle bacilli in the positive cases are fairly frequently found. Such laboratory evidence may be found even in the early cases. Similar studies made on the stools of infants will occasionally reveal the organisms.

Sedimentation Index.—The sedimentation index of the blood tells us that an infection is present but does not particularly indicate tuberculosis. It probably gives an idea as to the degree of activity of the infection.

Skin Rashes.—The appearance of erythema nodosum on the extremities and back of a young child should always arouse suspicion of tuberculosis. While not appearing in all cases, it is recognized in a certain percentage. Erythema nodosum may be caused by a number of other conditions.

PREVENTION

The most efficacious procedure in preventing tuberculosis in infants and children is to keep them from coming in contact with open cases of the disease. This appeals as the most logical method at our command today. The so-called healed adult case may be a source of contamination. It seems particularly valuable to prevent children from being born of tuberculous parents. Neither man nor woman has a right to marry when actively ill with the disease, because under such circumstances children born of such parents usually have to live with them and constant exposure results. Under such circumstances the securing of a healthy foster mother to care for the child in her own home will help to prevent contamination of the infant. The tuberculous mother should not nurse her baby, and all close contact with the child should be avoided.

The work with the BCG vaccine and reports so far available indicate the possibility that the prevention of tuberculosis by this method is probably desirable when one or the other of the parents has the disease. In the present state of our knowledge it does not seem wise to recommend that this vaccine be used as a routine for all children, regardless of whether there is tuberculosis in the home or not. The BCG vaccine does sensitize tissue and renders the child allergic to further contact with the tuberculoprotein. It also causes a body to harbor living tubercle bacilli which may later on in life become active and virulent. There are not sufficient data at the present time to determine the validity of this last statement.

Tuberculosis developing as a result of the use of infected milk is becoming more rare. The inspection and tuberculin testing of dairy cattle and the pasteurizing or boiling of all milk have done much to prevent the spread of bovine tuberculosis.

Certain diseases have been accused of lowering the resistance of the child to such an extent that such children are more apt to develop tuberculosis or, if they have it, to have reinfections occur. Whether there is any specific relationship of measles, whooping cough and other diseases to the lessened resistance of children to tuberculosis or not has not been definitely shown. It might be stated that the prevention of these diseases would help in preserving the natural resistance of the child.

It seems that the full elimination of tuberculosis will depend to a large extent on finding out the ones that are already infected. Active physical examination of all children attending school must become universal if such a hope is to be realized. This examination in most instances will fail to show definite signs of early tuberculosis in the child's chest, so it will be necessary to include the tuberculin testing of all school children and serial x-ray studies of their chests for all positive reactors.

A study of mortality records shows the increasing death rate from tuberculosis in children during adolescence and shortly thereafter. The study also shows the increasing number of girls so infected. During this time a great many children are anemic and underfed, and going through changes in their endocrine glands and constantly being stimulated to a great variety of activities, thereby interfering with adequate rest. There would appear to be some relationship between the development of the sexual functions and resistance to tuberculosis. Animal experimentation seems to corroborate this idea. In animals it seems that the removal of the gonads increases resistance to the disease.

The greatest danger of tuberculosis in the weak, anemic or underfed child comes with the approach of and during adolescence. Preventive work in this group is particularly deficient. Long hours in badly ventilated class rooms and college lecture halls, and in stores and work rooms, together with a lack of recreation, irregular meals of poor quality and insufficient quantity and insanitary living in general are mainly responsible for the spread of tuberculosis in the adolescent. The pediatrician might do well if he extended the age limit of his patients to include adolescents rather than the arbitrary twelve year limit.

It was hoped, when it was discovered that vitamin D increased calcification in the body if given in therapeutic doses, that it might be used in aiding the body to calcify and thereby heal tuberculous infections. There are not sufficient data at the present time to decide whether such a circumstance does happen. Recent studies of vitamin C show that apparently an individual who has tuberculosis needs and retains more vitamin C in his body than an uninfected person. Reasoning the other way, it might be stated that adequate amounts of vitamin C should be a part of every person's dietary.

Infant feeding has become pretty well established, so that the dietary needs of children are better understood today than ever before. The influence of maintaining optimum nutrition for every child, hoping thereby to increase resistance not only to tuberculosis but to all diseases, is a form of prevention that is frequently overlooked. To secure optimum nutrition, good hygiene with adequate fresh air and sunshine is necessary. The particular value of adequate rest is frequently overlooked in our care of children. It is difficult to restrict activities of the growing child, but undoubtedly sufficient rest for each individual child will help materially in the prevention of tuberculosis.

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THE DEGREE AND PREVALENCE OF VITAMIN A DEFICIENCY IN ADULTS

WITH A NOTE ON ITS EXPERIMENTAL PRODUCTION IN HUMAN BEINGS

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The changing status of the vitamin deficiencies in this country is well shown by recent publications [1] emphasizing the rarity of the fully developed, classic diseases and the frequency of the milder deficiencies. This is particularly true with regard to vitamin A deficiency. In a preliminary report, the present knowledge concerning the biochemical and physiologic aspects of vitamin A, the clinical and pathologic aspects of vitamin A deficiency, the mechanism of night blindness and methods of detecting mild degrees of deficiency were reviewed.[2] The present study deals chiefly with personal observations, and reference will be made to but a few pertinent papers. Complete bibliographies are available elsewhere.[3]

PROCEDURE

The material forming the major portion of this paper was obtained from a study of the students of Boston University School of Medicine. Each student received a test on the biophotometer,[5] and those with very low readings were rechecked before receiving therapy or else the result was confirmed with Edmund's test charts and photometric glasses. All tests on the biophotometer were performed in a dark room. The technic described by Jeans and his associates was followed.[4] Each student received ten minutes' dark adaptation as a control, three minutes' exposure to bright light and ten minutes' additional dark adaptation, with five readings taken at two and one-half minute intervals. Edmund's test [6] was done in a specially prepared room with black walls.

One hundred and sixty-two students were tested. The entire freshman class of sixty students was studied as a required exercise in biochemistry and physiology. The rest were selected at random from the remaining classes. Eleven students were eliminated because they had been taking concentrates of vitamin A. An elaborate dietary and general history was obtained from each subject and careful search made for objective and subjective manifestations of vitamin A deficiency. The fifty-five students found to have subnormal dark adaptation were treated and the results observed.

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From the Fifth (Boston University) Medical Service, Boston City Hospital, and the Department of Medicine, Boston University School of Medicine.

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1. Youmans, J. B.: The Present Status of Vitamin Deficiencies in Practice, J. A. M. A. **108**: 15-20 (Jan. 2) 1937. Blackfan, K. D.: Progress in the Early Recognition of Vitamin Deficiency States, New England J. Med. **215**: 1159-1162 (Dec. 17) 1936.

2. Jeghers, Harold: Night Blindness as a Criterion of Vitamin A Deficiency: Review of the Literature with Preliminary Observations of the Degree and Prevalence of Vitamin A Deficiency Among Adults in Both Health and Disease, Ann. Int. Med. **10**: 1304-1334 (March) 1937.

3. Frandsen, Helga: Hemeralopia as an Early Criterion of A-Avitaminosis and Clinical Symptoms and Treatment of This Disease, Acta. ophth., supp. **4**: 1-160, 1935. Jeghers.[2]

5. The biophotometer is manufactured by the Frober-Faybor Company, Cleveland.

6. The material for Edmund's test was obtained by communicating with Dr. Carsten Edmund, Copenhagen, Denmark.

RESULTS

What constitutes normal dark adaptation is at present not entirely settled. Rather than say that one photometer reading represented vitamin A deficiency and another showed its absence, an entirely new approach was made to the problem. The fifty students showing the best dark adaptation were compared with the fifty students showing the poorest. Those with values falling in between these two groups were eliminated from the final analysis. For convenience of discussion in this paper the two groups will henceforth be called the normal and the subnormal group, respectively.

The dark adaptation curves obtained for the fifty normal subjects all fell within the limits of the shaded area, as shown in chart 1. The dark adaptation curves obtained for twenty-five of the fifty subnormal subjects

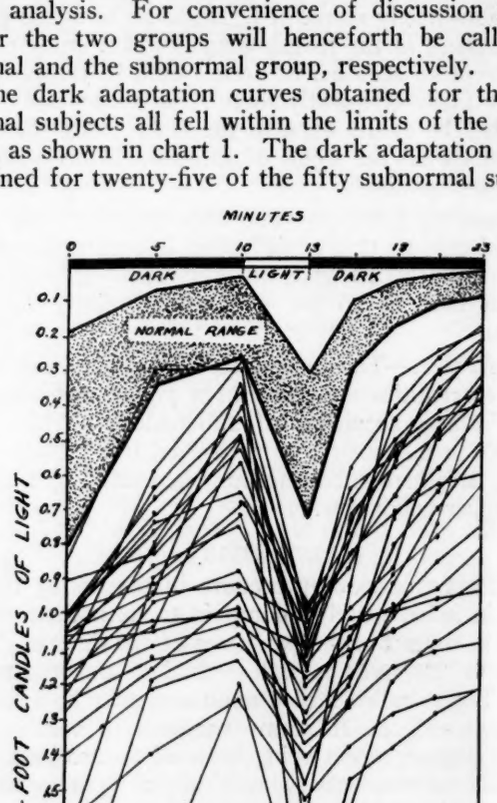

Chart 1.—The twenty-five lowest dark adaptation curves. The other twenty-five low curves ranged between these and normal values. The fifty highest curves all fell within the shaded area.

are individually plotted in chart 1. Only the lowest curves are given. The twenty-five not shown ranged in value between these and the normal curves.

General information concerning the two groups is shown in table 1. There were forty-five men and five women in the subnormal group, essentially the same distribution as that in the normal group. Seventy-four per cent of the normal students ate at home, while only 16 per cent ate in restaurants and 10 per cent cooked meals in their living quarters. There was a noticeable difference in the subnormal group, the majority eating away from home, 32 per cent frequenting restaurants and 26 per cent cooking in their living quarters. Of this group, only 42 per cent lived and ate at home. The normal students who ate in restaurants spent $7 a week per person, in contrast to $5.50 spent by the subnormal group. The normal students who cooked in their living quarters spent an average of $4.20 per week, in contrast to only $2.80 spent by the deficient group.

A meal was considered complete when it included all the items commonly served. For example, doughnuts and coffee or rolls and coffee were not considered a complete breakfast. A sandwich and soda or sandwich and coffee were not considered an adequate noon meal. In the normal group, 32 per cent received three full meals daily and 68 per cent received two complete meals. Lunch in this group was the weak meal, but it was commonly brought from home and proved to be more substantial and varied than the sandwiches purchased in neighborhood lunch rooms by the subnormal group. No person in the normal group received less than two adequate meals daily. In striking contrast, 60 per cent of the subnormal group ate but one substantial meal daily. These students invariably had coffee with toast, rolls or doughnuts for breakfast, a sandwich or two for lunch at noon and a complete meal at night. Thirty-six per cent had two complete meals and only 4 per cent had three adequate meals.

The clinical data are summarized in table 2. The average number of colds per year in the two groups was two and one-tenth and two and two-tenths, essentially the same. However, in the normal subjects the colds lasted five and one-half days on an average, as contrasted to seven and four-tenths days for the subnormal subjects. Eleven of the normal group were sick in bed for an average of four and three-tenths days. The sicknesses included common colds, grip and one case of streptococcic sore throat. In the subnormal group, sixteen were sick in bed for an average of eight and five-tenths days, and the illnesses were distinctly more serious, including, besides common colds and grip, four cases of streptococcic sore throat, two of sinusitis, one of otitis media and one of colitis. In several of these cases the diet was adequate and the infections were probably responsible for producing the vitamin A deficiency. Thirteen of the normal group had chronic focalized infections, which were, however, all mild and included pyorrhea, dental abscesses, catarrhal postnasal drip, granular pharyngitis and, in one case, tonsillitis. The nineteen subnormal subjects with chronic infections, on the other hand, had more serious conditions, which included two cases of repeated furunculosis, one of chronic otitis media, two of colitis, three of purulent sinusitis and two of tonsillitis.

Evidence of specific manifestations of vitamin A deficiency proved to be most instructive. In the normal group, no one complained of night blindness. One student, with a severe refractive error, had photophobia, which, however, showed no change with vitamin A therapy. Two students (men) had mild dryness of the skin, probably unrelated to deficiency disease.

In marked contrast were the manifestations of vitamin A deficiency in the fifty students with subnormal dark adaptation. Twenty-seven were clinically aware that they adapted poorly in the dark; in other words, they had definite night blindness sufficient to be recognized without resorting to a photometer test. They noticed it particularly while driving an automobile at night, on entering a darkened theater, while observing fluoroscopic examinations, while trying to play golf at dusk and because of inability to recognize friends on the street in a dim light.

It is not generally appreciated that persons with night blindness may find it hard to adapt to bright illumination as well as to dim illumination. This causes photophobia and was present to some degree in fifteen of the subnormal group.

Three students showed dryness (xerosis) of the conjunctivae, especially when the eyelids were held open for a minute or two. It was so mild as to be readily overlooked unless specifically kept in mind. Examination should be with oblique illumination. This observation was considered most important. All textbooks stress xerophthalmia as a leading sign of the deficiency. Actually, mild xerosis cannot be photographed. The illustrations usually shown in textbooks are reproductions of Bitot's spots and severe xerophthalmia, which have the appearance of frost on a window pane. This condition represents not simple dryness but opacity, thickening and keratinization of the conjunctivae. It was not seen in any case of deficiency studied to date and, judging by reports in the literature, must be very rare in adults in this country. The three students with

TABLE 1.—*Eating Habits of Fifty Persons with Normal Dark Adaptation Contrasted with Those of Fifty Persons with Subnormal Dark Adaptation*

	Normal Group	Subnormal Group
Men	45 90%	44 88%
Women	5 10%	6 12%
Persons eating at home	37 74%	21 42%
Persons eating at restaurants	8 16%	16 32%
Persons cooking and eating in living quarters	5 10%	13 26%
Average weekly amount spent by persons eating in restaurants	$7.00	$5.50
Average weekly amount spent by persons cooking and eating in living quarters	$4.20	$2.80
Persons eating three complete meals daily	16 32%	2 4%
Persons eating two complete meals daily	34 68%	18 36%
Persons eating one complete meal daily	0 0%	30 60%

TABLE 2.—*Clinical Data on Fifty Persons with Normal Dark Adaptation Contrasted with Data on Fifty Persons with Subnormal Dark Adaptation*

	Normal Group	Subnormal Group
Average number of "colds" per year	2.1	2.2
Average duration of each "cold"	5.5 days	7.4 days
Persons sick in bed during preceding year	11	16
Average period in bed per sickness	4.3 days	8.5 days
Persons with:		
Focalized chronic infection	13	19
Subjective night blindness	0	27
Photophobia	1	15
Dryness of conjunctivae	0	3
Burning of eyes	0	3
Blepharitis	0	2
Dryness of skin	2	15
Hyperkeratosis follicularis	0	2
Itching of skin	0	3
Acne	2	2
Average international units of vitamin A obtained daily from food eaten	5,560	2,445

dryness of the conjunctivae complained of burning sensations of the eyes. Two had noticeable blepharitis, and the lids were edematous.

Fifteen of the subnormal group had dryness of the skin which was generalized and occasionally rough. In a few cases it was very annoying, and much cream and lotion was used in an attempt to soften the skin. Six students noted that the dryness disappeared each summer while they were home and ate adequately, only to reappear again a few months after their return to school. In three cases, generalized itching was troublesome. Two students had noticeable hyperkeratosis of the hair follicles.

The following case histories are given to illustrate examples of the severe, moderate and mild deficiencies of vitamin A:

CASE 1.—A third year medical student, aged 25, while regularly testing members of his class was found to be night blind. There had been no serious illness since childhood. At the age of 19, while in college, he began to notice a progressive difficulty in driving an automobile at night. The glare of headlights was dazzling, and the road edge, pedestrians and signs

were barely seen. After an accident he had his eyes examined. No pathologic condition could be demonstrated; visual acuity was normal, and his trouble was diagnosed as eyestrain from studying. After a month's vacation, night driving was resumed. Shortly afterward he injured a pedestrian and gave up night driving but continued to drive extensively during the daytime. Another feature of interest was his inability to play golf in the early evening although his friends could readily do so.

TABLE 3.—*International Units of Vitamin A per Ounce of Food* *

Food	Reported Values	Average Values Assumed for Convenience of Calculation
Bread and cereals		
Cereals	0-40	20
Whole wheat bread	?	50
White bread	0	0
Yellow corn meal	198-236	200
Macaroni	0	0
Rice	?	10
Rye bread	0	0
Meats		
Pork (lean salt)	0	0
Average lean meat	7	5
Liver	2,860-3,920	3,000
Kidneys	210-323	250
Bacon	7	5
Fish		
Clams	8	10
Lean fish	0-3	2
Fish roe	1,175	1,000
Salmon	28-224	100
Fruits and nuts		
Apples	21	20
Apricots (dried)	300	300
Bananas	79-140	100
Berries	10-78	50
Cantaloup	126-130	100
Grapefruit	6	5
Lemons	?	100
Oranges	26-198	100
Peaches	2-392	200
Pears	5	5
Prunes	770-800	800
Watermelon	35-39	35
Dairy products		
Butter (per pat)	50-500	100
Cheese	42-1,960	1,000
Cream	294	300
Fresh milk	31-98	50
Evaporated milk	196	200
Lard	0-2	0
Eggs	770-1,100	1,000
Vegetables		
Broccoli	176	200
Brussels sprouts	118-133	100
Cabbage	14-24	20
Carrots (raw)	940-2,650	1,000
Cauliflower	19-21	20
Celery (white)	0-6	5
Asparagus	50-275	150
String beans	140-392	200
Navy beans	21	20
Lima beans	0	0
Beets	0-7	5
Lettuce	49-1,980	500
Onions	0	0
Peas	245-392	300
Green peppers	245-398	300
Turnips	7	5
Yellow potatoes	119-1,960	500
White potatoes	10-14	10
Sauerkraut	7	5
Squash	780	700
Tomatoes	237-590	400
Spinach	2,500-9,800	3,000
Olive oil	14	10
Cottonseed oil	6-39	25

* These values were obtained from Eddy, Walter H., and Dalldorf, Gilbert: The Avitaminoses, Baltimore, Williams & Wilkins Company, 1937, and are reproduced by permission. The average values were assumed for convenience in calculating the vitamin A content of the 100 diets studied for this paper.

When he entered a darkened theater, it was necessary for the usher or a friend to lead him to a seat. Otherwise, from ten to fifteen minutes' adaptation was required before he could find his way down the aisle. Bright lights were as annoying as his inability to see well in dim light. In two further examinations the eyes were reported as normal. The student finally decided that it was normal for him to adapt poorly in the dark and ceased further quest for medical aid.

His general health remained fair. Accompanying the night blindness there had been progressively increasing dryness of the skin. About one year before he had noticed for the first time roughness of the skin due to enlarged hair follicles, more marked on his back and on the extensor surfaces of his extremities. This persisted but did not increase. Examination revealed a dry scalp and dry skin, with moderate hyperkeratosis follicularis. The conjunctivae showed mild dryness (xerosis) but no Bitot's spots. There was definite blepharitis.

The results of the initial and follow-up photometer tests are shown in chart 2. The diet was of interest. Since leaving home seven years before, he had constantly observed the following regimen: Breakfast consisted of black coffee and doughnuts. Two meat sandwiches, coffee and dessert constituted lunch. Dinner consisted of meat, white bread, white potatoes, dessert, coffee and a small portion of vegetable. One pat of butter was taken with the evening meal. No milk, fruit, spinach, carrots, ice cream, liver or cheese had been eaten for years. The evening vegetable was either string beans, lima beans, beets, peas or corn. This choice was one of habit and not of financial necessity. The diet was calculated to supply less than 1,000 units of vitamin A daily. Treatment consisted of the administration of 25,000 units of vitamin A daily in the form of halibut liver oil concentrates and the addition of milk, butter, fresh fruits and vegetables to the diet. Remarkable changes followed. Subjective improvement in the night blindness was noted within ten days. After five weeks the skin had returned to normal texture. There was a feeling of general well being that had not been experienced for years. Within two months dark adaptation was entirely normal. The subject could now drive at night with ease, walk into a theater and find his way to a seat at once, and for the first time appreciate a fluoroscopic examination.

This case represents the classic fully developed picture of vitamin A deficiency. One senior had a practically identical story. This degree of deficiency was seen also in a girl college student aged 17 (trying to reduce), an accountant aged 31, a housewife aged 29 (trying to reduce) and a welfare worker aged 30. All these persons made a similar recovery.

CASE 2.—A senior student, aged 27, was first observed during a routine test. Dark adaptation was moderately poor. He rarely drove at night because of the glare of headlights and his inability to see the road. On entering a theater he had to wait several minutes before attempting to find a seat. No detail could be seen during a fluoroscopic examination unless from twenty to thirty minutes was allowed for adaptation. There was moderate dryness of the skin but no hyperkeratosis. Xerosis of the conjunctivae was absent. These symptoms had been noted for several years. The dietary history was illuminating. Breakfast consisted of coffee and pie; lunch, of coffee and sandwiches. The patient ate his dinner at home. There were many idiosyncrasies in connection with food. Tomatoes once a week and apples were the only source of carotene. No milk, butter or cheese was taken. One egg a week and a serving of liver a month were eaten. Bread, meat and spaghetti constituted the bulk of the food consumed. This diet was estimated to supply about 1,300 international units of vitamin A daily.

The initial and follow-up photometer tests are shown in chart 3. Treatment with 30,000 units of vitamin A daily resulted in return of dark adaptation to normal within three months and complete subjective relief of the dry skin and night blindness.

This subject was typical of those who showed moderately severe night blindness, with or without mild dryness of the skin, but no evidence of hyperkeratosis or xerosis. About twenty students could be considered to fall into this category.

The average daily intake of vitamin A for each student was calculated. The values given in table 3 were utilized; they represent international units of vitamin A per ounce of food with the exception of the value for butter, which is measured in pats.[8] To simplify calculations, average values in round numbers were assumed for each food. When the range given varied greatly (i. e., spinach, from 2,500 to 9,800),

8. Eddy, Walter H., and Dalldorf, Gilbert: The Avitaminoses, Baltimore, Williams & Wilkins Company, 1937, pp. 316-321.

a lower value was chosen. This was done so that the complete results would represent minimal rather than optimal intakes. However, since this study represents chiefly winter eating habits, the values are probably close to the actual amount of vitamin A consumed.

It was fairly easy to obtain accurate dietary histories from these students. Some cooperated by keeping food

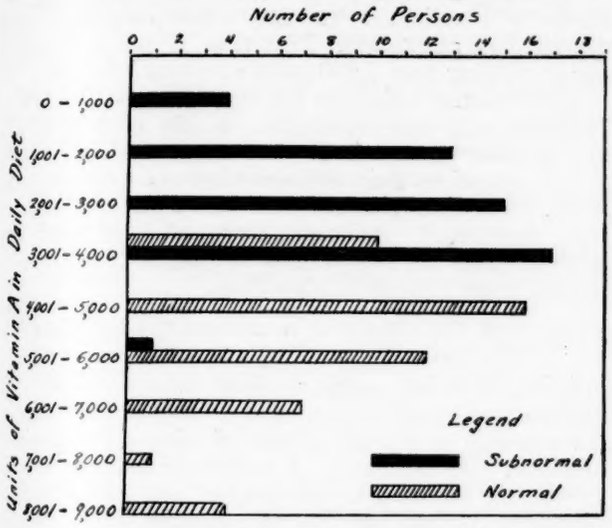

Chart 5.—International units of vitamin A consumed daily in diet by fifty persons with normal and fifty persons with subnormal dark adaptation.

diaries. The results obtained are plotted graphically in chart 5. The normal group had a daily average intake of 5,560 international units of vitamin A, with a range from 3,300 to 9,000 units. The subnormal group averaged 2,445 units daily, with values ranging from 900 to 4,000 units except for one student with a value of 5,500 units. The exact distribution of these figures is well shown in chart 5. Except in one case there was no overlapping of the normal and subnormal group except in the range of from 3,001 to 4,000 units daily, which contained seventeen subnormal and ten normal subjects.

Further analysis of the dietary histories is shown in table 4. The total amount of each type of food rich in vitamin A consumed by each group was calculated. From these figures, the average for the normal and for the subnormal subject were obtained. Members of the normal group consumed from two to three times as much of each of these foods as those of the subnormal group. The exact figures are listed in table 4.

TREATMENT OF VITAMIN A DEFICIENCY

All the students with subnormal dark adaptation were treated. Capsules of carotene in oil [9] were given to ten students, the rest receiving capsules of halibut liver oil concentrates.[10] A variety of doses was tried. The best results were secured when 70,000 units of vitamin A was taken orally for two weeks, followed by 25,000 units daily until the dark adaptation became normal. In other words, massive doses are given at first to replenish rapidly the depleted storage of vitamin A in the body.

The therapeutic results were striking. Subjective night blindness was relieved in every severe case, the shortest time being one week and the longest five months. The photophobia usually improved at the same time. The changes in the skin were much slower, not being noticeable in most cases until after from four to ten weeks of treatment. Eleven of the fifteen subjects with dry skin regained normal skin texture; in the two cases of hyperkeratosis the condition disappeared entirely. The other four subjects with dry skin were still under treatment. Itching was relieved in each case. At the time of writing this paper, thirty-six students had regained normal adaptation, nine had improved and five were waiting to be retested.

9. The Carotene was supplied by the S. M. A. Corporation, Cleveland.
10. The halibut liver oil capsules were supplied by Parke, Davis & Co., Detroit.

COMMENT

The analysis of these results allows several interesting and important conclusions to be formed. The study offers additional evidence of the reliability of subnormal dark adaptation as an indirect measure of vitamin A deficiency. More important, however, was the demonstration of the frequency of clinically detectable vitamin A deficiency. Of the entire student group of 162, approximately 35 per cent showed photometric evidence of vitamin A deficiency, while 12 per cent showed clinical evidence. Each of the students with severe subjective symptoms had seen one or more physicians. The eyes were always found to be normal, or refractive errors were corrected.

In most cases, the factors responsible for producing the deficiency had been operative for months, and in many, for years. The folly of the prolonged substitution of a sandwich, roll or doughnuts for one or more complete meals is evident. The eating habits of these students were no different from those of numerous other adults in all walks of life. It is obvious that many adults are entirely ignorant of food values or of what constitutes an adequate diet.

The worst diet likely to be chosen by an American will probably contain at least 800 or 1,000 units of vitamin A daily. This means that absolute deficiency is rarely seen. In each of the severe cases herein reported, the symptoms (night blindness, photophobia and dry skin) had persisted for years, progressing but slowly until a stationary level seemed to be reached. Xerosis was either absent or so mild as to be readily overlooked. Even in the worst cases, the night blindness was not entirely incapacitating. Usually, because of the slow development, its presence was not noticed unless the performance of some unusual act in the dark was required.

TABLE 4.—*Consumption of Foods Rich in Vitamin A by Fifty Persons with Normal and Fifty Persons with Subnormal Dark Adaptation*

	Normal		Subnormal	
	Total for Group	Average for Individual	Total for Group	Average for Individual
Pats of butter per day	225	4.5	163	3.3
Servings of cheese per week	127	2.5	46	0.9
Number of eggs per week	304	6.1	178	3.5
Glasses of milk per day	106	2.1	38	0.7
Servings of liver per month	126	2.5	60	1.2
Servings of vegetables per day	96	1.9	49	1.0
Servings of lettuce per week	161	3.2	91	1.8
Servings of spinach per month	203	4.0	83	1.7
Servings of carrots per month	208	4.1	108	2.1
Servings of tomatoes per week	176	3.5	77	1.5
Servings of fruit per week	310	6.2	165	3.3
Servings of apricots per week	7	0.1	0	0.0
Servings of prunes per week	30	0.6	11	0.2

DAILY REQUIREMENT OF VITAMIN A FOR ADULTS

For many reasons the exact daily requirement of vitamin A by human beings has not been determined. Foods vary in vitamin A content with regard to season, storage, dehydration, oxidation and method of cooking.

Individuals probably vary with regard to absorption, storage, conversion and destruction of vitamin A and carotene. In spite of these obstacles certain estimates are available, but they vary widely.

Harris [11] placed the minimal daily requirement at 1,000 units (U. S. P.). This seems a very low figure. Stiebeling [12] set from 4,200 to 5,600 international units as the daily requirement of adults. Rose [13] suggested an allowance of 140 international units per hundred calories for adults who have stopped growing. Growing children should be allowed twice this amount. Cameron [14] advised an optimal intake of 5,000 units or over a day. Funk and Dubin [15] placed the optimal requirement for adults at 8,000. Many of these values are purely estimates based on clinical impressions.

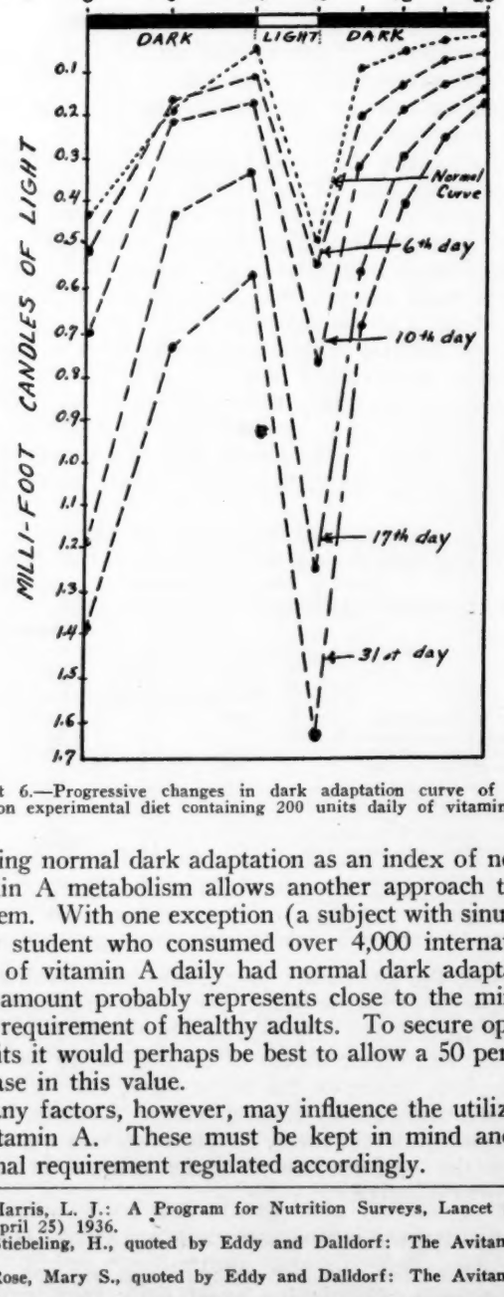

Chart 6.—Progressive changes in dark adaptation curve of subject living on experimental diet containing 200 units daily of vitamin A.

Using normal dark adaptation as an index of normal vitamin A metabolism allows another approach to the problem. With one exception (a subject with sinusitis) every student who consumed over 4,000 international units of vitamin A daily had normal dark adaptation. This amount probably represents close to the minimal daily requirement of healthy adults. To secure optimal benefits it would perhaps be best to allow a 50 per cent increase in this value.

Many factors, however, may influence the utilization of vitamin A. These must be kept in mind and the minimal requirement regulated accordingly.

11. Harris, L. J.: A Program for Nutrition Surveys, Lancet **1**: 966-968 (April 25) 1936.
12. Stiebeling, H., quoted by Eddy and Dalldorf: The Avitaminoses, p. 18.
13. Rose, Mary S., quoted by Eddy and Dalldorf: The Avitaminoses, p. 19.
14. Cameron, Hazel C.: Effect of Vitamin A upon Incidence and Severity of Colds Among Students, J. Am. Dietet. A. **11**: 189-204 (Sept.) 1935.
15. Funk, Casimir, and Dubin, H. E.: Vitamin and Mineral Therapy, New York, U. S. Vitamin Corporation, 1936.

Unfortunately, the influence of each of these factors is but poorly understood, and quantitative measurements are almost completely lacking. The Committee on Nutrition of the League of Nations suggested a daily intake of 8,700 international units of vitamin A for the pregnant and the nursing woman.[16] In a study of forty-four pregnant women in the antepartum clinic of the outpatient department of the Massachusetts Memorial Hospital, it was found that only three had normal dark adaptation. Less than 10 per cent had a diet containing over 7,000 units of vitamin A daily.

That infection influences the metabolism of vitamin A has been suggested repeatedly. In the present study, the deficient group had more numerous and more serious infections than the normal group. In a special study, eight older children with active rheumatic fever were observed.[17] Although they had been receiving between 5,000 and 10,000 units of vitamin A daily, each showed subnormal dark adaptation.

RELATION OF VITAMIN A DEFICIENCY TO AUTOMOBILE DRIVING AT NIGHT

Aside from its purely medical aspects, vitamin A deficiency will probably prove of great importance from the practical and legal points of view. That night blindness due to vitamin A deficiency interferes with driving an automobile was pointed out in an earlier report.[18] At that time but two clearcut instances had been noted. Since then (a period of eight months) twenty-one additional persons have been seen who demonstrated this fact. Three were almost entirely unable to drive at night, six rarely did so and the remainder drove but disliked to. Cases 1 and 2 in this paper are representative. Five accidents involving such persons had been directly attributable to this symptom. In all cases proper therapy completely restored normal dark adaptation and eliminated night blindness. Several of these persons are now driving at night for the first time in years.

The complaints of these hemeralopes fell into two categories. They were easily dazzled and temporarily blinded by headlights from other automobiles. Lights which would annoy a normal person but slightly were able to deplete the low store of visual purple in the retinal rod cells. The incomplete and unduly slow regeneration of this phototropic substance left them temporarily with only cone vision or, in other words, blind for dim illumination. They experienced little difficulty while driving on artificially illuminated city streets, because cone function could be utilized. The major difficulties were experienced on dark country roads. Long drives were unduly fatiguing at night. Aside from being bothered by the dazzle of lights, these people saw the road, road edge, markers and pedestrians with great difficulty. This was particularly true after they passed an oncoming car. It is interesting to note that in no case had the correct diagnosis been made. This subject is discussed in detail elsewhere.[18a]

EXPERIMENTAL PRODUCTION OF VITAMIN A DEFICIENCY IN HUMAN BEINGS

Practically all the work dealing with the experimental production of vitamin A deficiency has been limited to laboratory animals. It is obvious that the use of animals

16. Quoted by Funk and Dubin: Vitamins and Mineral Therapy, p. 24.
17. These children were studied at the House of the Good Samaritan, Boston, through the cooperation of Dr. J. M. Faulkner.
18. Jeghers, Harold: Night Blindness Due to Vitamin A Deficiency: A Consideration of Its Importance in Traffic Problems, New England J. Med. **216**: 51-56 (Jan. 14) 1937.
18a. Jeghers, Harold, and De Silva, H. R.: Night Blindness and Glare Blindness Due to Vitamin A Deficiency: An Important Cause of Automobile Accidents, New England J. Med., to be published.

is not desirable for the analysis of minor manifestations of this deficiency, in view of the subjective character of many of the manifestations.

The following experiment was tried, not to gather conclusive evidence but to outline the technic of producing vitamin A deficiency in human beings for experimental purposes.

A healthy man (the writer), aged 32, was used. There had been no serious sickness since childhood. A mild infection of the upper part of the respiratory tract had been present for three days in November 1936. The diet had always been adequate, and photometer tests at intervals for the preceding two years had shown normal dark adaptation in every instance. In addition, 10,000 units of carotene and 17,000 units of vitamin A had been ingested daily for three months prior to the experiment. It was felt that under such circumstances the stores of carotene and vitamin A in the body were at their peak.

The diet used to produce a pure vitamin A deficiency is shown in table 5. The vitamin A content is listed as international units per ounce of food. Such a selection of foods readily supplied an adequate number of calories and sufficient protein, carbohydrate and fat. In addition, 25 mg. of cevitamic acid, 200 Sherman units of vitamin B_1 and 100 Sherman units of vitamin B_2 in the form of brewers' yeast, and 40 grains (0.26 Gm.) of calcium lactate were taken daily. Exposure outdoors on sunny days was considered sufficient to supply an adequate amount of vitamin D.

Sufficient food was eaten to satisfy hunger. The diet proved not unpalatable. It could have been enormously improved by the use on bread of a "spread" which was free from vitamin A. Fluids consisted of water and black coffee. At each meal the number of vitamin A units consumed was calculated. The intake averaged 200 units daily.

The experiment was started on March 29, 1937. Readings were obtained daily on the biophotometer and weekly by Edmund's test. The results are plotted in chart 6. On the sixth day the first photometric impairment of dark adaptation was noted. Afterward there was a steady and progressive decrease in the ability to adapt in darkness. Representative figures obtained on the tenth, seventeenth and thirty-first days are shown in chart 6.

Definite subjective night blindness was noted late in the fourth week and particularly during the fifth week. This was searched for while the subject was driving at night, entering a darkened theater and observing fluoroscopic examinations and by means of prearranged tests at home. Comparisons were made with persons with normal adaptation. This degree of night blindness would easily have been overlooked had it come on slowly and spontaneously and persisted for a long time. Accompanying the night blindness was mild photophobia, especially noticeable while the subject was driving an automobile at night.

On the thirty-first day the skin was still smooth and the eyes free from burning and there was no xerosis. At 12 o'clock noon, 80,000 units of vitamin A was taken orally, and at 12:30 a normal dinner was consumed. At 2 p. m. a photometer reading was taken and showed marked improvement. Readings were taken at twenty-four hour intervals, and 100,000 units of vitamin A was consumed daily. Within three days dark adaptation had returned to normal and the subjective night blindness and photophobia were relieved. The photometer readings obtained during the recovery phase are plotted in chart 7.

Certain conclusions can be drawn from this experiment. Moore,[19] by correlating the survival period of rats on a diet free from vitamin A with the reserve of vitamin A stored in the rat's liver, and comparing the latter with the reserves stored in human livers, was able to conclude that a human being could live for six months on a diet completely free from vitamin A. However, this is the survival period. It is obvious from the experiment reported in this paper that the store of vitamin A could keep the visual purple mechanism at peak efficiency for only one week and could not protect against subjective symptoms for more than three weeks. Incidentally, the diet used supplied 200 units daily. The worst diet encountered in clinical practice yielded 900 units of vitamin A daily. One can conclude that clinically important vitamin A deficiency is produced only after months or years of a deficient diet.

19. Moore, Thomas: XVIII. Vitamin A and Carotene: XIII. The Vitamin A Reserve of the Adult Human Being in Health and Disease, Biochem. J. **31**: 155-164 (Jan.) 1937.

SUMMARY AND CONCLUSIONS

Vitamin A deficiency is common in adults and varies from a photometrically detectable phase to the complete clinical syndrome. In a group of medical students, 35 per cent had low photometer readings and 12 per cent had clinical manifestations of the deficiency. The chief manifestations, in the order of their frequency, were night blindness, photophobia, dry skin, dry conjunctivae, blepharitis and follicular hyperkeratosis. The factors producing the deficiency were analyzed and showed that the skipping of meals and poor choice of foods were chiefly responsible. After dietary analyses it was concluded that 4,000 international units of vitamin A daily represent the minimal requirement for a healthy adult. Infections were more numerous and severe among the deficient students. Further evidence that it is dangerous for the hemeralope to drive an automobile at night was obtained. Photometric evidence of night blindness appeared in six days and subjective evidence in five weeks after the production of a pure vitamin A deficiency in an experimental subject. Night blindness preceded gross epithelial changes.

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ABSTRACT OF DISCUSSION

DR. M. A. BLANKENHORN, Cincinnati: I concur in the main with the conclusions and commend the method the speaker has just described. I have practiced somewhat the same technic in studying a few patients with marked nutritional disturbance. I have found severe night blindness, as recorded by this technic, which disappeared after treatment with vitamin concentrates. I was unable to correlate this night blindness with complaint, because the patients were not aware of blindness. I am sure that there may be difficulties of vision due to errors in diet and the patient not be aware of it. I did, however, find a number of such patients who were night blind who did not have dryness of the skin. So I am certain that one cannot correlate at present these two stigmas of vitamin A deficiency. The ophthalmologists have criticized this work because they believe not enough is known of the threshold of light perception. Ophthalmologists have made questionnaires of the complaint of night blindness and they do not find much blindness; but most of their studies made on the perception of light deal with thresholds of light so low that they fall outside the realm of testing such as Dr. Jeghers has done. So I think this particular work here presented will withstand critical inspection by ony one. It is true that health surveys have been made of children in large groups reporting defects of light perception which fall within the range which the ophthalmologists criticize. Dr. Jeghers did a wise thing here. He threw out of his consideration most of the cases that fell in this doubtful realm. He did a very safe thing from the nutritionist's point of view; also he compared the fifty highest in the class with the fifty lowest and discarded the midgroup. A good bit of the health testing that the ophthalmologists criticize falls in this class with slight impairment of light perception. Dr. Jeghers has wisely disregarded that group in this study. I should like to ask Dr. Jeghers whether he finds marked and rapid fluctuation of the light threshold when testing normal persons. I have been studying a few persons whom I considered normal who fluctuated rapidly from day to day. If I were to apply rigid rules, I would say that today they are deficient and tomorrow they are all right, regardless of medication or diet. Does he find such variation? If so, how does he explain it? From seeing a few patients with severe nutritional disturbances, I get an impression that night blindness may come and

go rapidly and that a great deal more must be learned about the physiology of vitamin A before many clinical problems can be intelligently handled.

DR. JOHN B. YOUMANS, Nashville, Tenn.: Dr. Jeghers' paper is an important contribution in the field of dietary deficiencies. My associates and I can report observations similar to Dr. Jeghers'. Using the same type of photometer, we detected a subnormal dark adaptation in half of fifty clinic patients, many of whose diets were suspected of being inadequate. A similar defect was found in eleven of fifty-four supposedly normal subjects whose diets were presumed to be adequate. All showed a return to normal vision when they received adequate treatment. The dietary study of Dr. Jeghers' subjects indicates clearly a deficient or borderline intake of vitamin A in the group with hemeralopia. However, such group statistics are often confusing to the physician dealing with the individual patient. He is apt to complain that while his patient shows signs of the disease the diet appears to be adequate. However, deficiencies occur as the result of one or more of three causes: (1) deficient supply, (2) imperfect absorption or utilization, (3) an increased demand. Insufficient knowledge of the latter two and failure to appreciate quantitative relationships will explain many discrepancies. With reference to the first of Dr. Jeghers' case reports, referred to as a classic example of the fully developed picture of vitamin A deficiency, it must be emphasized that the description should be interpreted in the light of current ideas of this deficiency. Difficulty in driving a car at night, dryness of the skin, roughened hair follicles and slight dryness of the conjunctivae did not constitute the picture of fully developed vitamin A deficiency in even the recent past. The difference in time required by the vision, on the one hand, and the skin and other epithelial surfaces on the other, to respond to treatment is of practical importance. The former, which requires only an adequate supply of vitamin A, can be restored quickly. The latter, which involves a slow process of anatomic repair, takes much longer and treatment in cases of vitamin A deficiency should be continued long after the visual abnormality has been corrected. It should be pointed out that vitamin A is not the only substance involved in the process of regeneration of visual purple. It is brought about by a series of complex chemical reactions. Glutamine, for example, affects markedly the glycolytic activity of retinal tissue and theoretically disturbances in some of these other mechanisms may at times be involved rather than the supply of vitamin A. From a practical point of view, however, this seems very unlikely, except in rare instances, and the effect of treatment will serve in most cases to confirm the diagnosis.

DR. M. G. WOHL, Philadelphia: Full blown cases of deficiency diseases are rare in this country; especially is this true of xerophthalmia. In 1926 I had the opportunity to review this subject and was able at that time to collect from the American literature only two cases of xerophthalmia that developed on account of incorrect diet. In connection with a study of avitaminosis in diabetes, I described an instance in which a school teacher, aged 32, acquired xerophthalmia in the course of diabetes. Since then, three additional cases of xerophthalmia have been reported in the American literature. In the wards of the Philadelphia General Hospital, the clientele of which is made up of the poorer classes of the community, fully developed cases of deficiency diseases, with perhaps the exception of pellagra and scurvy, are a great rarity. This at least has been my experience in the work for the past five years. Dr. Jeghers is to be congratulated on producing a pure vitamin A deficiency in an otherwise healthy adult, for dietary deficiency is more complicated in the human being than in the laboratory animal, and avitaminosis is frequently of the multiple type, as our patient who presented clinical and postmortem signs of xerophthalmia and beriberi. It is to be remembered that in addition to the hypovitaminosis such patients suffer from general undernutrition, and the same may apply also in experimental avitaminosis. In our experience with induced avitaminosis in animals, we frequently had difficulty in evaluating postmortem observations as to how much was to be attributed to pure avitaminosis and how much to undernutrition. I should like to ask Dr. Jeghers what his experience has been with the photometer for dark adaptation in patients with hypometabolism. I have reference to the thin hypothyroid patients with dry, scaly skin, who present many features not unlike those shown on the screen by Dr. Jeghers. It would be of interest to know what the basal metabolic rate was in his group of cases.

DR. HAROLD J. JEGHERS, Boston: The test is a subjective one, and for that reason the most satisfactory results are obtained when intelligent persons are studied. There may be a definite fluctuation even in the normal group. It was discovered that a slight drop in the curve of normal persons resulted if the testing was done late in the day. Really low values may be obtained if a person has remained up all night. After a night's rest the test would again be normal. No systematic study was made of cases of hyperthyroidism. Experimentally it has been shown that the thyroid gland influences vitamin A metabolism. The large number of low curves was a surprise to me. The first reaction was that we weren't doing the test right or that something else was wrong. Particularly early in the study, many of these students had two, three or four tests apiece on consecutive days, usually with similar results. In addition, many were checked by the more difficult, but much more objective, method of Edmund. There was a close correlation between these two methods of testing for vitamin A deficiency. The prompt clinical response to therapy, the fact that the speed of response varied with the dosage of vitamin A and the consistent changes in the dark adaptation curves speak in favor of the specific nature of this test as a measure of vitamin A deficiency. The duration of the colds in these students was determined by the questionnaire method. I am unable to explain why it was shorter than in the group studied by Drs. Spies and Shibley.

VOLATILE SOLVENTS AS A PROBLEM IN INDUSTRIAL MEDICINE

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The increasing prominence of volatile solvents in modern industrial processes emphasizes the need of early recognition of any toxic action on exposed workers which, if recognized, may lead to corrective measures being adopted. Within the past few years the number of newly perfected solvents has steadily mounted, until today well in excess of 300 are in common use, contrasted with a bare half dozen used twenty years ago. One or more of the solvents are used in ever increasing quantity and variety in nearly every manufacturing industry today either as a solvent or as a diluent. They are employed as cleaning or degreasing agents, in lacquer coatings, in dyes and cement, as plasticizers, and as solvents of cellulose and gums of various kinds in a myriad of synthetic finishing materials.

The volatile solvent vapors enter the body chiefly through the respiratory passages, but appreciable quantities may either be ingested or absorbed through the intact skin. When toxic substances are inhaled, they pass into the general circulation and are distributed to the heart and to the central nervous system with a rapidity second only to that seen when they are injected directly into the veins. They can produce either a general toxic action without harm to the respiratory tract or a mixed effect, being generally toxic and locally irritant. A few irrespirable vapors act so violently in

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Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL by the omission of a table giving the classification of industrial solvents. The complete article appears in the author's reprints.

the upper respiratory tract and lungs that their general toxic effects are secondary considerations.

The absorption of vapors through the alveolar wall is accomplished by the process of diffusion, which depends on a difference in the partial pressures of the gases contained in the blood and in the inhaled air—a physiologic fact of great importance when it comes to the consideration of first aid treatment. As long as the partial pressure of the vapor in the lungs is greater than that in the blood, absorption will continue. Hence the first and most essential step in acute poisoning is the removal of the victim from the polluted atmosphere. Equally important and essential, taking precedence over any and all other measures or drugs, when natural respiration has been affected, is the application of manual artificial respiration.

Substances ingested, if they do not set up sufficient irritation to cause vomiting, may be absorbed by the intestine in varying amounts, depending on their properties and their reaction with the material of the digestive tract. A large portion of the absorbed substance passes into the portal circulation and may be satisfactorily handled by the liver.

Some of the more toxic fat soluble vapors are absorbed through the intact skin. Dermatitis may be set up by the continual handling of almost any of them, either because of their fat solvent properties or because of sensitivity, natural or acquired. Many of them may also affect the eyes and any optic neuritis or paralysis in workers exposed should give rise to investigation.

It is characteristic of the quick drying lacquers that the solvent which is their vehicle evaporates with great rapidity and hence may produce a high concentration of the vapors in a confined space. The increasing use of a spray gun in applying finishes to large surfaces has greatly increased the hazard of toxic vapors in many processes. Dip and flow methods also involve the use of large quantities of solvents.

With few exceptions, all volatile solvents, if inhaled in sufficient concentration for a sufficient length of time, are detrimental to health, although their early effects on the body frequently go unrecognized or are regarded as minor ailments of no consequence, because of inadequate knowledge of their physiologic properties. The concentration of vapor solvents in the air breathed depends on their volatility, which, in turn, is often dependent on their temperature and the effectiveness of ventilating equipment.

While the responsibility of finding satisfactory solutions of these new problems created by the use of solvents lies primarily in the field of industrial medicine, more knowledge of these poisons is desirable among general practitioners who see the slighter forms of poisoning. The failure to diagnose industrial poisoning is well illustrated by Lejeune,[1] a general practitioner himself, who discusses twenty-nine cases of poisoning by tetrachlorethane, benzene, benzine and trichlorethylene, which he has treated in his practice during the last few years. Thirteen of these patients had previously consulted other doctors and in twelve of the cases no diagnosis of poisoning had been made.

HYDROCARBONS

Of the various groups of solvents encountered, perhaps the most important to the physician are the chlorinated compounds, because of their anesthetic and poisonous action. The member of this group with which we are all familiar is chloroform. Although chloroform possesses high solvent powers, it does not find wide application in industry because of its well known anesthetic properties. Carbon tetrachloride is perhaps the most widely used solvent of this group. It is very much like chloroform but is more toxic and is used extensively as a cleaning fluid and in fire extinguishers. It has been used medically as a vermifuge in hookworm disease. Its narcotic effects are less marked than those of chloroform, but its effects on the liver, heart and kidneys are much more rapid. Carbon tetrachloride, together with other members of the group, also has a marked effect on the nervous system, probably because these are lipoid solvents. There are changes in the blood in the direction of a leukocytosis, but these do not dominate the picture as they do in hydrocarbons of the benzene ring group. The effects on the heart are very important in cases of acute poisoning, because, in addition to acting as a heart depressant, there is a tendency to cause fibrillation. This means that stimulants, such as epinephrine, are a dangerous first aid measure in resuscitating persons overcome by these vapors.

Trichlorethylene is the least inflammable of the group and, because of its solvent action in fats and oils, it is used as a thinner for coatings and varnishes and as a solvent for rubber, replacing carbon tetrachloride in many instances. It is also claimed to be a less poisonous substance, but increasing evidence shows it to be far from innocuous. Reports of 284 cases of poisoning with twenty-four deaths have been collected by Stüber.[2] While not so damaging to the body organs, it is a profound nerve poison. It has been suggested, however, that the impurities present are responsible for its poisonous properties.

Dichlorethylene is severely toxic. Severe cases of poisoning have been reported in men who were coating the interior of beer vats, using a lacquer containing this solvent. Autopsies on men overcome by its vapors showed an excess of fat in the blood suggesting death from embolism rather than asphyxiation. Perchlorethylene causes a severe and rapid narcosis.

Tetrachlorethylene is a relatively new solvent and is less narcotic than the majority, although symptoms of drowsiness, headache, giddiness and a narrowing of the visual field have been reported from repeated daily inhalations.

Tetrachlorethane is the most poisonous of the chlorinated hydrocarbons. In acute poisoning the symptoms develop rapidly. The condition is characterized by acute yellow atrophy of the liver, jaundice, and fatty changes in other viscera, especially the heart, and death frequently results. In chronic cases the blood changes are marked, leading to secondary anemia, hemoglobinuria and hemolysis. Emaciation and even jaundice may follow.

A toxic ambly pia, or an optic neuritis, has been noted by several observers in the case of exposure to chlorinated hydrocarbons. Some of this group decompose when heated and undergo chemical changes. Chloroform, dichlorethylene, ethyl dichloride, and carbon tetrachloride are oxidized to carbon oxychloride or phosgene.

1. Lejeune, E.: The Frequency of Industrial Poisonings Seen in General Medical Practice, Schweiz. med. Wchnschr. **66**: 914-917 (Sept. 19), 940-941 (Sept. 26) 1936; abstr. Bull. Hyg. **12**: 16 (Jan.) 1937.

2. Stüber, K.: Arch. f. Gewerbepath. u. Gewerbehyg. **2**: 398 (July 27) 1931.

Chlorinated naphthalene products used, among other ways, as a form of wax in insulating, have been clearly shown to cause severe skin troubles and have been suspected of causing fatal cases of yellow atrophy of the liver. It is interesting that these substances appear relatively harmless when cold, but when heated, despite the fact that they do not decompose or liberate chlorine and hydrochloric acid, the vapors cause acne more or less characteristic of chlorine acne.

Of the other groups of coal tar hydrocarbons, those of the aromatic series are the most important from the point of view of toxicity. The principal effect of this group of narcotics is on the hematopoietic system.

Benzene (benzol), one of the most volatile of the group, is a solvent for cellulose, gums, resins, fats and oils. Its use as a diluent in paints and lacquers and in paint removers is disappearing because of its dangerous toxic effects.

Toluene and xylene, the higher homologues of benzene, are perhaps just as toxic but are less dangerous under ordinary circumstances because they are less volatile. These, too, are gradually being replaced by the apparently less toxic hydrogenated naphthas.

High concentrations of benzene are rapidly fatal. Exposures to moderate concentrations cause symptoms similar to alcoholic intoxication at first but are followed by symptoms of progressive depression with possible parkinsonian syndrome. Repeated exposures to small concentrations of benzene cause gastro-intestinal disturbances, headaches, vertigo, gingivitis and frequently nosebleeds, and small hemorrhages of the gums and conjunctiva. Purpura may be noticed and sometimes uncontrollable hemorrhages occur, particularly if there is any surgery done. The blood undergoes important changes as a result of destruction of the blood-forming organs. Anemia and, later, leukopenia with special reference to the granular polynuclears are seen. Fatty degeneration of the blood vessels, heart, liver and kidneys frequently follows.

It may be of interest to recall that recently considerable evidence has been produced to the effect that therapeutic drugs derived from the benzene ring—such as aminopyrine—may be the cause of an agranulocytosis in susceptible individuals. Once these blood changes have taken place, they are, in the present state of our knowledge, very apt to be irreversible.

The finding of a red blood count under 4,000,000 or a white blood count under 5,000 on repeated observation, accompanied by the symptoms indicated and a history of sufficient exposure, should be considered diagnostic of chronic benzene poisoning.

Yant and Schrenk's [3] method for determining increased organic sulfate in the urine is probably the best indication of benzene exposure and absorption.

Naphthalene is somewhat similar to benzene. It has a less pungent odor and probably is less toxic. Naphthalene has been suspected by a number of observers as a cause of cataract.

Among the derivatives of the hydrocarbons, carbon disulfide deserves special mention because of its varied effects on the body following repeated exposure to small concentrations. Concentrations of from 300 to 400 parts per million in the air for several hours are thought to be possibly toxic. Carbon disulfide is used chiefly in the rubber and artificial silk industry.

Chronic poisoning is characterized by persistent headache, somnolence during the day, and weakness of the limbs. Carbon disulfide is extremely damaging to the nervous system, causing polyneuritis, visual disturbances, tremors, mental confusion, severe psychosis and ataxia. An important characteristic of this poison is its effect on the higher nerve centers. Anemia is not uncommon, with occasional changes in the red blood cells and, rarely, a leukocytosis. Not only is it damaging to the eyes, but the disappearance of the corneal reflexes is said to be an early sign of poisoning. However, Wiley, Hueper, and von Oettingen [4] quote Rodemacher as recommending the carbon disulfide level in the blood as the best indication of incipient carbon disulfide poisoning.

Petroleum hydrocarbons, which are often confused with the coal tar derivatives because of the similarity in names (benzine, naphtha) are all familiar solvents which have a mildly anesthetic action. The higher concentrations cause headache, dizziness, blurred vision and even loss of consciousness. Any chronic blood damage from this group is controversial and, if found, probably points to the advisability of looking for some other exposure or cause, particularly the admixture of one of the more dangerous types of solvents in the substance handled. Like all the other solvents, these can readily cause a dermatitis.

Turpentine vapors have a direct action on the skin, causing reddening and not infrequently an obstinate eczema. The inhalation of heavy fumes of turpentine induce symptoms of a mild narcotic poisoning. Nephritis has been reported from prolonged exposure.

PHENOL COMPOUNDS

Cyclohexanol (hexalin, adronol, anol or sexol) is a hydrogenated phenol used in pyroxylin lacquers. It is not very volatile, and it evaporates much more slowly than other solvents. It is narcotic and may cause poisoning if inhaled. From animal experiments, it is thought to paralyze the central nervous system and to be more toxic than benzene, though not as dangerous on account of its low volatility. No cases of poisoning in man are on record.

A very dangerous substance which may be used in plasticizers is orthotricresyl phosphate. This is the poison which was identified some years ago as the cause of an epidemic of "jake paralysis" from drinking bootleg jamaica ginger. These men have never completely recovered. Usually, in solvents the para and meta tricresyl phosphates are used, and these do not appear to have the peculiar action of the ortho compounds, according to Hamilton.[5]

ALCOHOLS AND THEIR ETHERS

The alcohols are perhaps the most widely used of the various classes of solvents. As a group they are narcotic and injurious to the nervous system. Ethyl alcohol is used for research and analytic work in educational and industrial laboratories and is employed for many scientific and medical needs. It is a solvent for gums, resins and many organic and inorganic compounds. Methanol is used largely in the manufacture of pyroxylin plastics, varnishes, textile soaps and wood

3. Yant, W. P.; Schrenk, H. H.; Sayers, R. R.; Horvath, A. A., and Reinhart, W. H.: Urine Sulfate Determinations as a Measure of Benzene Exposure, J. Indust. Hyg. & Toxicol. **18**: 69 (Jan.) 1936.

4. Wiley, F. W.; Hueper, W. C., and von Oettingen, W. F.: On the Toxic Effects of Low Concentrations of Carbon Disulfide, J. Indust. Hyg. & Toxicol. **18**: 733 (Dec.) 1936.

5. Hamilton, Alice: Recent Changes in the Painter's Trade, Bull. 7, Division of Labor Standards, U. S. Department of Labor, Washington, D. C., 1936, p. 59.

stains, as well as in extraction processes. One of its most important uses is in the manufacture of formaldehyde. Isopropyl alcohol is used as a substitute for ethyl alcohol, mainly in perfumes and high grade toilet preparations. It is claimed to be an effective germicide and is used in lotions, liniments, liquid soaps and antiseptic solutions. Normal butyl alcohol is the most popular and widely used of the higher alcohol group. Large quantities enter into the manufacture of nitrocellulose lacquer.

Generally speaking, the toxicity of the alcohols increases with the molecular weight; but the decreased solubility and volatility of the higher alcohols partially offset the danger of exposure to concentrated vapors. The exception to this rule is methyl alcohol, which may be produced synthetically or by distillation of wood. It is a powerful nerve poison which specifically affects the optic nerves and may result in blindness and death. Owing to its slow oxidizing action in the body, its effects are cumulative, and severe poisoning may result from continued exposure to even small concentrations, without any early warning symptoms. Experimentally, it has been shown to cause poisoning through skin absorption.

Although amyl alcohol and fusel oil are more toxic when taken by mouth than any other way, they play a minor rôle in industrial poisonings. Butyl alcohol produces liver and kidney damage in animals exposed to its vapors.

Tertiary alcohols are more toxic than secondary alcohols, and primary alcohols are the least toxic. Isoalcohols are usually less narcotic than the corresponding normal alcohols. A most interesting case of toxic encephalopathy has been reported, however, in a woman who used a mixture of solvents containing 3 per cent dimethyl phthalate, 3 per cent cellosolve and 74 per cent isopropyl alcohol in "fusing" collars with a hot iron.[6]

A larger group of newer solvents which is rapidly coming into greater prominence is the alcohol-ethers, or oxides, and the furfurals. Often these may be compounded with phthalic acid, oxalic acid or formic acid, thereby introducing the possibility of a second toxic agent. Our knowledge of this group is largely based on animal experimentation, though a number of cases of industrial poisoning have been reported. As a group, they are narcotic or anesthetic, and some of them are known to be toxic in the higher concentrations, but there is little information concerning their chronic effects or the maximum permissible concentration.

Diethylene dioxide (dioxan), also used as a lacquer solvent, is irritating and unpleasant, and these effects were thought to constitute a sufficient warning that concentrations were approaching the danger point. In England, however, five deaths were recorded as being due to the fumes of dioxan, with severe inflammation of the liver and kidneys.

ESTERS, KETONES, GLYCOLS AND THEIR ETHERS, AND FURFURALS

Esters, ketones, glycols and their ethers, and furfurals constitute probably the most important group of solvents for nitrocellulose and cellulose acetate. All are narcotic in sufficiently heavy concentrations and in proportion to their volatilities. Although fatal accidents are very rare, evidence is beginning to appear pointing to their physiologic effects as being more dangerous than they were formerly considered. Reference to a reported death in one man from the inhalation of amyl acetate and another from the inhalation of ethyl acetate is made by A. V. St. George.[7] In the former, edema of the glottis and diffuse irritation of the respiratory and gastro-intestinal tract were the chief pathologic changes, and in the latter there was a marked congestion of the viscera and the eyes, almost entirely liquid blood in the vessels, petechia-like hemorrhages throughout the serous cavities and mucous membranes, and a pungent odor on opening the body.

Amyl acetate is readily recognized by its sweet, sickening odor, and it is generally known as "banana oil." Its vapors cause irritation of the throat, burning of the eyes, vertigo, drowsiness and gastric irritation. In experimental animals the inhalation of amyl acetate produces chronic inflammatory changes in the respiratory system, parenchymatous degeneration of the kidneys, and fatty livers. The blood shows a moderate leukocytosis with a secondary anemia.

Methyl, ethyl, propyl and butyl acetate are other members of the ester group of solvents. Methyl acetate is sometimes used as a substitute for acetone, but it is not widely used, because of its acid reaction with water. Ethyl and butyl acetates are the most widely used of all the solvents of nitrocellulose.

Of the ketone group of solvents, acetone is probably the most widely used, and it is one of the most powerful solvents known. The impurities present depend on the method of manufacture and are no doubt responsible for some of the toxic symptoms that are encountered. Its narcotic action in animals is more pronounced than that of chloroform. The examination of the blood after continued inhalation shows a destruction of the red cells and hemoglobin. It does not appear to produce chronic tissue damage as long as the vapor concentrations are low, even though exposure is prolonged.

Several ketones of higher molecular weight have been recommended as good solvents for nitrocellulose, but they have little or no effect on cellulose acetate. The more important members of this group are methyl-propyl ketone, or pentanone, and methyl-butyl ketone, or hexanone. Their acute effects on guinea-pigs were studied by Yant and his colleagues,[8] who report that death results from a state of narcosis rather than from the irritation of the lungs. All fatalities occurred during the exposure. Men momentarily exposed to approximately 1.3 and 5 per cent of pentanone vapor and to 1.23 and 2 per cent hexanone vapor complained of irritation of the eyes and nasal passages and of a characteristic strong odor.

Of the glycols and their ethers, the mono-ethyl ether of ethylene glycol, or "cellosolve," is the most important solvent of this class. It is a stable liquid and it is used as a solvent for nitrocellulose and resins, and it offers the advantage over most other solvents of similar boiling point in being nearly odorless. The acute physiologic response of guinea-pigs to air containing its vapor was determined by Waite, Patty and Yant,[9] who found

6. Donley, Dorothy E.: Toxic Encephalopathy and Volatile Solvents in Industry, J. Indust. Hyg. & Toxicol. **18**: 571 (Oct.) 1936.

7. St. George, A. V.: The Pathology of the Newer Commercial Solvents, Am. J. Clin. Path. **7**: 69 (Jan.) 1937.

8. Schrenk, H. H.; Yant, W. P., and Patty, F. A.: Acute Response of Guinea-Pigs to Vapors of Some New Commercial Organic Compounds: X. Hexanone (Methyl Butyl Ketone), Pub. Health Rep. **51**: 624 (May 15) 1936; Acute Response of Guinea-Pigs to Vapors of Some New Commercial Organic Compounds: IX. Pentanone (Methyl Propyl Ketone), ibid. **51**: 392 (April 3) 1936.

9. Waite, C. P.; Patty, F. A., and Yant, W. P.: Acute Response of Guinea-Pigs to Vapors of Some New Commercial Organic Compounds: III. "Cellosolve" (Monoethyl Ether of Ethylene Glycol), Pub. Health Rep. **45**: 1459 (June 27) 1930.

the cause of death, in the animals who died twenty-four hours after exposure, to be congestion and edema of the lungs, and in animals dying three days after exposure, to be bronchopneumonia. Two of the investigators who breathed 0.6 per cent cellosolve vapors for a few seconds reported the atmosphere to be irritating to the eyes and to have a very disagreeable odor. They thought that the odor and the irritation were sufficiently disagreeable to make one desire to avoid a like exposure.

Furfurals are excellent solvents and are used considerably in industry. The vapors are irritating and are very damaging to the eyesight of some persons.

SUMMARY

An estimation of the extent of any health hazard resulting from solvents and mixtures of solvents can be reached only after careful analysis of individual circumstances.

The mere knowledge that volatile solvents are used in certain industrial processes does not justify the conclusion that all illnesses among the working personnel may be attributed to exposure to these substances. Solvent vapors can be, and frequently are, confined within a closed system or are prevented, by proper exhaust equipment, from escaping into the plant atmosphere. In doubtful instances the diagnosis of industrial intoxications through inhalation should be further confirmed by chemical analyses of the air breathed. Such analyses are also essential in determining the efficiency of measures instituted to prevent the diffusion of these vapors into the breathing zone of the workers.

The difficulties encountered in determining the concentration of vapors in the plant atmosphere are many. In the first place, distinction must be made between vapor concentrations associated with plant operations and those resulting from accidents and irregularities in operation. Under normal operations they may be present in the air in very low concentrations, which may require special technics in collecting air samples and selective methods of analysis. When two or more solvents are present in the air in combinations at the same time, it is frequently impossible, by existing methods of chemical analysis, to identify and estimate individual components, although they can be differentiated and estimated as groups. Benzene and its homologues may be detected by a rather intricate colorimetric method, while carbon disulfide must be estimated by microtitration after absorption in an alcoholic potash solution. The chlorinated hydrocarbons may be determined by a combustion method in which the liberated hydrogen chloride is absorbed. Other groups, such as the alcohols, esters, ethers and ketones, may be determined or estimated by various analytic methods. When two or more members of a group are present, it is usually impossible to separate them and the results of the analysis must be recorded on the basis of the more toxic material. When a mixture, such as a lacquer thinner which may contain methyl and ethyl alcohol, acetone, benzene, ethyl and amyl acetate and butyl cellosolve, is under consideration, the problem becomes involved. It then becomes necessary to use a method that will determine the total amount of solvent vapor present. This may be done quantitatively by freezing out the vapors with liquid air, by absorption with activated charcoal or silica gel, by a carefully calibrated interferometer, or by a combustible gas indicator that will indicate the presence of all inflammable solvents present. Many of these methods of analyses, however, are far from satisfactory and considerable research work must be conducted before the analyst and the industrial hygienist will feel confident of the results.

The recognition of industrial poisoning from the inhalation of volatile solvents is generally quite difficult. Acute and fatal poisonings do occur, but usually under circumstances that disclose the responsible agent.

The detection of volatile solvents in the body after death from an acute poisoning is possible for all substances having a boiling point below that of water by the micro methods of Gettler [10] and others. This method depends on condensation of the material in tubes immersed in freezing mixtures. In the living, or in those who have lived a few days before death from poisoning, these small amounts cannot be detected. Examination of the urine is revealing in some cases, and examination of the blood tells the story of cumulative exposures in others. Nothing much is known regarding the detection of halogenated hydrocarbons, but with brominated compounds there will be some bromine in the urine, and it is possible with chlorinated hydrocarbons that organic chlorides may prove to be indicative of absorption.

Industrial poisoning, however, is characteristically chronic in form. The worker's health is gradually impaired by repeated small inhalations of the solvent material, and evidence of toxemia may not arise for several years. Although solvents do not accumulate in the body, as does lead for example, there does occur an accumulation of effects from repeated daily inhalations. Seldom do these exert their influence on a single organ. Changes usually are found in the blood, kidneys, liver, heart, nervous system and other organs.

The clinical picture and symptomatology may be similar for many solvents and a diagnosis frequently must depend on a correlation with the chemical analysis of the air breathed and evidence revealed by the examination of the blood and the urine.

The prevention of poisoning by inhalation is dependent entirely on the measures employed against the diffusion of vapors into the plant atmosphere. There is no single measure of control that is applicable to all operations. A combination of measures usually must be employed to insure success. These include the substitution of harmless or less harmful solvents for harmful ones, the segregation of vapor-producing operations, enclosure of processes which confines the vapors, mechanical methods including local exhausts applied either above or below the processes according as the vapors to be entrapped and removed are lighter or heavier than air and increased general ventilation to insure rapid changes of air, personal protective devices, instruction of workers regarding the hazard, and competent medical supervision.

Personal protective devices frequently offer inadequate protection. Respirators should be used only in an emergency or when the exposure is intermittent and should be of such a type that the worker breathes air from an uncontaminated source. Skin absorption can best be prevented by cleanliness of body and clothing. The absorption of vapors through the intact skin, especially if spilled or absorbed in the clothing, must be borne in mind. This is particularly true of the fat soluble solvents.

1 Madison Avenue.

10. Gettler, A. O., and Siegal, Henry: Isolation from Human Tissues of Easily Volatile Organic Liquids and Their Identification, Arch. Path. **19**: 208 (Feb.) 1935.

ABSTRACT OF DISCUSSION

DR. HENRY FIELD SMYTH, Philadelphia: As chairman of the Industrial Hygiene Section of the American Public Health Association, I have abstracted more than 400 papers on volatile solvents during the past three years. Out of 322 papers, 122 discussed benzene, 108 chlorinated hydrocarbons, thirty-seven petroleum products, twenty-nine alcohol esters or ethers, and twenty-six carbon disulfide; 1,714 cases of injury from carbon disulfide were reported, 375 from chlorinated hydrocarbons, 323 from benzene and derivatives, 186 from petroleum products, twenty-seven from formaldehyde and eight from alcohol. Forty-three fatalities mentioned in these papers have been attributed to chlorinated hydrocarbons, twenty-five to formaldehyde, sixteen to petroleum products, twelve to benzene or derivatives, six to carbon disulfide, and one each to alcohol and turpentine. And, by the way, there is no volatile solvent much mentioned in the literature which some one at some time has not drunk in search of a "kick." As chlorinated hydrocarbons have created a great deal of interest recently, I have considered those separately, with 108 papers reviewed, fifty-seven of them devoted to carbon tetrachloride, twenty-one to trichlorethylene, seven to chloroform, four to chlorobenzene and nineteen scattered or referring to mixed solvents. Of the cases of injury from chlorinated hydrocarbons reported, trichlorethylene leads the list with 299, carbon tetrachloride follows with sixty-five, methyl chloride five, tetrachlorethane three, ethylene dichloride and chlorobenzene one each, and mixed solvents one. I am opposed to the practice of selling any of these chlorinated hydrocarbons for dry cleaning in gallon packages to the consumer, no matter how they are labeled, for the labels are not read or understood. One reads time and again of a housewife who buys a gallon and washes half a dozen dresses in a small room, hanging them up to dry while she goes on working. She does everything possible to assure that she be poisoned, and she too often is. If the materials were sold to the consumer in pint containers, these regrettable accidents would happen less frequently and much prejudice against these really useful materials would be avoided.

DR. LEON LEWIS, Newark, N. J.: I should like to ask Dr. McConnell about the toxicity of common household insect sprays and about the actual toxicity of glycols, particularly ethylene and diethylene glycol.

DR. WILLIAM THAU, Boston: I should like to ask Dr. McConnell how certain poisoning with many of the drugs he cited can be prevented. It is known that in the hospitals, the operating rooms and particularly in the laboratories, volatile solvents such as ether, chloroform, solution of formaldehyde, xylene and many dyes are almost constantly handled by the technical staff. Sometimes tragic results, for instance an optic atrophy, can be cured, if it is not too late. But how can one prevent such ill effects while one is always exposed to the action of these solvents?

DR. HAROLD B. WOOD, Harrisburg, Pa.: There is a large amount of spraying done where fruit trees grow, and I should like to ask Dr. McConnell whether he has taken that into consideration.

DR. MILLARD KNOWLTON, Hartford, Conn.: I should like to ask how many of these volatile solvents are known to be carcinogenic in character. Does the increase in the use of volatile solvents account for the increase in lung cancer?

DR. ZOLTON T. WIRTSCHAFTER, Cleveland: I should like to ask the author whether he agrees with Dr. Smyth in the statement that he does not believe that oxidation of carbon tetrachloride goes on in the body. I believe that it goes on in the lung following exposure. I believe that carbon tetrachloride gives off phosgene in small amounts in the lung. Graham, in his experimental work about twenty years ago, demonstrated the presence of hydrochloric acid in the lungs and liver of animals after exposure to carbon tetrachloride. The acid was a further oxidation product of carbon tetrachloride. The reaction undoubtedly is $CCl_4 + H_2O \leftrightarrows COCl_2 + 2\ HCl$. Hence phosgene is an important factor in the pathogenesis of carbon tetrachloride intoxication.

DR. R. R. SAYERS, Washington, D. C.: One thing that has been done that might be emphasized is the labeling as carried out by cooperation with the manufacturers in advance of the law. That does not prevent the hazards, as Dr. Smyth has called to our attention, but it does give the physician and others competent an opportunity to advise the users of the hazards to which they are exposed. At the present time all halogenated hydrocarbons are being properly labeled when they contain 15 per cent or more of a volatile halogenated hydrocarbon, and whether it is chorinated bromide, iodine or fluorine. Fire extinguishers are being labeled showing that they contain carbon tetrachloride in excess of 15 per cent—that is, when they do. This does not apply to the very small packages, but it does apply to all packages of 15 ounces or more; as a matter of fact, even those small packages of carbon tetrachloride in the ten cent stores are so labeled. Many of the other toxic volatile solvents are also labeled as to the toxic substances they contain. I should like to emphasize another fact that Dr. McConnell called to our attention, that most of these volatile organic hydrocarbons are toxic if breathed in sufficient concentration but that they may be used with proper precautions. The outstanding precaution is to keep the man from breathing it by a closed process, having good exhaust equipment, good general ventilation and personal protection.

DR. C. P. MCCORD, Detroit: Dr. McConnell referred to organic silicon compounds. I believe he made some mention of organic silicates. We in Detroit are in the midst of a study of that group of solvents. At the present time we have just completed a study on ethyl silicate. We anticipated that there might be some toxicity from ethyl silicate analogous to silica. Much to our surprise, we found an enormous toxicity from ethyl silicate which apparently is unrelated to the toxicity now associated with silica. We have introduced the ethyl silicate into small animals intraperitoneally, intravenously and orally and have applied it to the skin. When so small a quantity of ethyl silicate as 0.02 cc. per hundred grams of animal weight is introduced intravenously, the animal dies within five minutes. The point of action is limited to the capillaries of the lung tissue, with slight involvement of the capillaries of the heart. Within five minutes there is hemorrhage into the lung sacs with some rupture of the lung sacs, and rupture of the capillaries of the lung, and apparently death is due, in the case of rabbits, to air aspirated through the ruptured air sacs leading to air emboli. It appears that connected with silicon compounds there are other toxicities apart from the action of silica, and in the group of organic solvents in the organic silicon group there appears to be a new and interesting field, of which ethyl silicate appears to be an outstanding item.

DR. W. J. MCCONNELL, New York: Some very interesting problems have been brought up in the discussion. I am particularly interested in the evidence which has been produced recently from the possibility of oxidation of carbon tetrachloride in the lungs; that is, the reduction of the carbon tetrachloride in the oxyhydrochloric acid and phosgene. The evidence produced certainly appears to be logical and the evidence as presented in some of the recent literature seems very convincing. Naturally, there is great possibility of the formation of phosgene, particularly when carbon tetrachloride is sprayed on hot metal and when fire extinguishers are used in confined spaces. The cancer-producing properties of chlorinated compounds present an interesting subject and the doctor who asked that question will be interested in an exhibit in the preventive hygiene section which demonstrates some skin cancers in mice. I suggest that those interested see the exhibit and the action on the skin of some of these compounds. Regarding insecticides and fruit sprays, I believe that all of these may be said to be toxic. Of course, in these sprays the chief toxic substances are the nicotines and lead arsenate compounds. Of the glycols, ethylene glycol, or "cellosolve," is the most widely used. It is a stable liquid and an excellent solvent for nitrocellulose and resins. The Bureau of Mines has made a study of this solvent, using animals for the exposure, although two of the investigators also exposed themselves to low concentrations. The cause of death in the animals was due to congestion and edema of the lungs. The men themselves found it to be rather irritating and complained of a disagreeable odor. Regarding the preventive measures, particularly in hospitals where the smaller quantities of various solvents are used, I feel that the danger of toxic exposure under those conditions usually results from spilling the substance. The quantities used in hospitals and in labora-

tory work are fairly small, but there is a possibility, where solvents in quart bottles or gallon jugs are standing around on laboratory desks, of their being knocked over and broken. I think that the chief caution is to use them in smaller quantities and in metal containers equipped with stoppers that will not come off if the containers are knocked over, so that the material will not spill. The real preventive measure is to prevent the dissemination of the fumes, either by local exhaust systems and good general ventilation, or by using these substances in closed systems. The latter methods are more applicable to industrial processes than to preventive measures for small quantities used in hospitals.

EVALUATION BY CONTROLLED SERIES OF VAGINAL TRICHOMONIASIS THERAPIES

H. CLOSE HESSELTINE, M.D.
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Vaginal trichomoniasis is one of the very common gynecologic clinical entities; and yet, in spite of numerous American and European publications in the last one and one-half decades, controversies continue unabated, especially on the subject of therapy. There are considerable differences also in the criteria employed to diagnose cures. Today the drastic scrubbing procedures have been almost replaced by a dry technic, with the patient self-administering much of the treatment. The type of vehicle, nature of the medicaments and method of treatment are too divergent and unrelated to review at this time. Because too few controls have been established, the favorable reports of many preparations have yet to be properly confirmed. Notable exceptions are the reports of Bland and Rakoff [1] and Pattyson.[2] Consequently, it was deemed wise to observe the therapeutic effect of three arsenical, one silver picrate and two lactose preparations and their respective controls on obstetric and gynecologic patients. The importance of prophylactic, as well as curative, therapy is emphasized. Only the lack of clinical material has restricted the scope of this study.

A small number of the regular clinic personnel treated the patients in accordance with a prescribed routine and with the assignment of control cases. So far as was feasible, the regular (or special) preparations and the control materials were coded. Such safeguards may eliminate, perhaps, some of the otherwise unavoidable experimental errors of observation and thus aid materially in pointing out the merits of procedures and preparations.

PROCEDURE

The therapeutic agents were studied primarily for their curative effect. Cervical erosion, urethritis and other associated inflammatory lesions were treated by appropriate means only when such lesions were obvious. Examinations of the urinary and intestinal tracts were not made as a matter of routine, nor were the husbands of all the patients available for examination. However, a special study for foci of infection was undertaken when patients did not respond to the therapeutic agent in question. Special periods at the clinic were allotted, and the patients were treated as often as possible by the same physician. This centralization favored proper supervision of patients, clinic physicians and technic of treatment. The results obtained under these conditions should indicate significantly the value of the preparations and procedures in question.

The five supposedly active medicaments were acetarsone (Merck), acetarsone (Winthrop), carbarsone (Lilly), silver picrate (Wyeth) and lactose with citric acid or kaolin. The control patients received the preparation minus the supposed active medicament; i. e., the vehicles alone were used. The patients were assigned in rotation, every other patient being used as a control, except in the lactose series. Unless a time interval was set by the proponent of a preparation, the Chicago Lying-in standard (Adair-Hesseltine [3]) was used for determining cures. To be diagnosed as cured by this standard the gynecologic patient must go through two consecutive menstrual periods without treatment, remain free from symptoms and present no clinical or laboratory evidence of the disease. The pregnant patient must fulfil these requirements over a period of two months during pregnancy or before and after parturition.

TABLE 1.—*Results of Acetylaminohydroxyphenylarsonic Acid* and Control† Therapy in Patients with Vaginal Trichomoniasis*

		Nonpregnant Patients			
	Pregnant Patients	Number	Average Weeks Treated	Total Uncured	Total Treated
Regular therapy.....	None	17			17
Cured.....		13	3		
Uncured.....		4	4	4 (24%)	
Control therapy.....	None	17			17
Cured.....		13	3		
Uncured.....		4	4	4 (24%)	
				8 (24%)	34

* Acetarsone (stovarsol).
† Materials furnished by Merck & Co.

In the accompanying tables the ages were omitted because they fell well within the limit of experimental range. All the patients were adult women. The youngest was 18 and the oldest 55.

Gellhorn [4] reported the use of 12.5 per cent acetylaminohydroxyphenylarsonic acid (acetarsone) in equal parts of kaolin and sodium bicarbonate. His standard dose is 1 teaspoonful, which contains 7½ grains (0.5 Gm.) of the drug. The treatment is administered by a special blower two or three times a week. Douches are not permitted. He stated that six treatments should cure obstinate cases. This procedure was followed exactly throughout. The control material contained the same ratio of kaolin and sodium bicarbonate, but the acetarsone was omitted. The results were judged on a basis of four weeks' treatment, as suggested by Gellhorn.

About four years ago acetarsone in special carbohydrate material (partially hydrolized and partially oxidized) began gaining favor in Germany. The materieal for this study was dispensed entirely in tablet form. From two to four tablets were ordinarily placed about the cervix by the physician, and the patient was instructed to insert two each evening into the vagina. Office visits were once a week for the first two or three

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Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

1. Bland, P. B., and Rakoff, A. E.: The Investigation of a New Pentavalent Arsenical, Aldarsone, in the Treatment of Trichomonas Vaginitis, Am. J. Obst. & Gynec. **32**: 835 (Nov.) 1936.
2. Pattyson, R. A.: Trichomonas Vaginalis Vaginitis: A Laboratory and Clinical Study, New York State J. Med. **37**: 41 (Jan. 1) 1937.
3. Adair, F. L., and Hesseltine, H. C.: Histopathology and Treatment of Vaginitis: II. Biochemical Approach in Treatment, Am. J. Obst. & Gynec. **32**: 1 (July) 1936; idem, unpublished.
4. Gellhorn, George: The Treatment of Trichomonas Vaginitis with Acetarsone (Stovarsol), J. A. M. A. **100**: 1765 (June 3) 1933.

times and later at longer intervals. Douches were not allowed. The number of tablets was decreased as the condition improved. The special carbohydrate material minus the acetarsone was used for the control.

Drabkin's [5] carbarsone (*p*-carbamido-phenylarsonic acid) routine has been used only a comparatively short time. Briefly, for the first week the patient at bedtime takes a soapsuds enema, followed by a plain water enema, and then inserts into the rectum a carbarsone suppository. Immediately a soapsuds douche followed by one of plain water is taken, after which 5 grains (0.3 Gm.) of carbarsone and 5 grains of sodium bicarbonate (dissolved in 2 teaspoonfuls of water) are injected into the vagina and retained. The next morning one carbarsone suppository is inserted into the rectum and one into the vagina. This routine is repeated each night and morning for the first week. Thereafter it is decreased gradually by weekly steps. Lactic acid or vinegar douches are used as necessary and daily during menstruation. The rectal therapy is discontinued after three weeks. If the condition is not cured in one month, or if it recurs later, the routine is repeated. The control material was the same throughout but lacked the arsenical compound.

The silver picrate compound of Buxton and Shelanski [6] required weekly visits for the insufflation of kaolin and the silver salt. The patient inserted each evening on retiring a medicated boroglyceride-gelatin suppository. The control material was free from silver picrate.

Adair and Hesseltine [3] reported that 95 per cent lactose and 5 per cent citric acid tablets and powder gave a high degree of success in cases of vaginal trichomoniasis. Each tablet contained about 2 Gm. of the mixture. After their value became evident, control cases were started, plain lactose tablets or equal parts of lactose and kaolin being used. From this time on each case was assigned in turn to one of the three preparations. The plain lactose perhaps serves best as the control.

RESULTS

Let it be remembered that the interpretations or comparisons of regular and control materials are only for each unit. Comparisons with other materials would be unfair because the experimental conditions were not identical or simultaneous. The study was to evaluate the influence of so-called specific materials and the influence of the vehicles on the course of the disease and not primarily to compare one so-called specific material with another. The regular, as well as the control, materials were furnished for the most part by the respective companies.[7] These companies, unsolicited, requested the clinical trial and willingly consented to the establishment of controls.

The results of acetylaminohydroxyphenylarsonic acid (acetarsone) in 12.5 per cent concentration in sodium bicarbonate and kaolin, as recommended by Gellhorn,[4] and its control were observed in only thirty-four patients long enough to analyze. Other patients started on the treatment did not complete the course and naturally cannot be included. Table 1 shows that four of the seventeen controls and four of the regular series were unimproved. The average periods of treatment were identical, and only gynecologic patients were used. No untoward results or complications resulted from the use of the arsenical mixture. Certainly no particular merit was evidenced.

In table 2 the results of acetylaminohydroxyphenylarsonic acid (acetarsone) in the ten obstetric patients are shown to be excellent, but the number of patients is entirely too small. The two gynecologic groups had the same number of failures. Although there may be definite merit in the regular preparation, it is not enough better for its superiority to be established positively here. Again, eighteen and twenty-one patients, respectively, are too small a series from which to draw positive conclusions unless there is a great difference in the results. Thus, acetarsone prepared by another company did not show a pronounced specificity.

TABLE 2.—*Results of Acetylaminohydroxyphenylarsonic Acid* and Control† Therapy in Patients with Vaginal Trichomoniasis*

	Pregnant Patients		Nonpregnant Patients		Total	
	Number	Average Weeks Treated	Number	Average Weeks Treated	Uncured	Treated
Regular therapy.....	5		16			21
Cured.....	4	3	14	10		
Uncured.....	0	0	2	12	2 (10%)	
Control therapy.....	5		13			18
Cured.....	5	6	11	7		
Uncured.....	0	0	2	8	2 (11%)	
Totals.....	10		29		4 (10%)	39

* Acetarsone.
† Materials furnished by Winthrop Chemical Co., Inc.

Nine cases, as summarized in table 3 (*p*-carbamido-phenylarsonic acid [carbarsone] and its control), are too few for final conclusion. These are included only because the experiment is still in progress. The procedure as outlined by Drabkin [5] is rather detailed and time consuming, and some objection and lack of cooperation on the part of the patients were encountered. Rectal therapy is surely a prophylactic measure. It is an interesting observation that the control material has given cures in all four control patients.

TABLE 3.—*Results of* p-*Carbamido-Phenylarsonic Acid* and Control† Therapy in Patients with Vaginal Trichomoniasis*

		Nonpregnant Patients		Total	
	Pregnant Patients	Number	Average Weeks Treated	Uncured	Treated
Regular therapy.....	None	5			5
Cured.....		5	9		
Uncured.....		0		0	
Control therapy.....	None.	4			4
Cured.....		4	9		
Uncured.....		0		0	
		9		0	9

* Carbarsone.
† Materials furnished by Eli Lilly & Co.

Table 4 shows that three of the twenty-two patients treated with the regular silver picrate material were unimproved while only two of the nineteen controls failed to be benefited. This apparent discrepancy in the results of the silver picrate is unimportant, since it falls well within the experimental range. Furthermore, no untoward results developed, and some of the patients did get very satisfactory results from the substance. A sufficiently large series might not only give a reversal of these results but even show an advantage for the regular silver picrate preparation.

5. Drabkin, Charles: p-Carbamino Phenyl Arsonic Acid in the Treatment of Trichomonas Vaginalis Vaginitis, Am. J. Obst. & Gynec. **33**: 846 (May) 1937.

6. Buxton, R v. L., and Shelanski, H. A.: Trichomonas Vaginalis Vaginitis: Incidence, Diagnosis and Treatment with Silver Picrate, Am. J. Obst. & Gynec. **33**: 842 (May) 1937.

7. Acetarsone (Stovarsol), Merck & Co.; acetarsone, Winthrop Chemical Co., Inc.; carbarsone, Eli Lilly & Co.; silver picrate, John Wyeth & Brother, Inc.

The data of Adair and Hesseltine [3] (table 5) show that lactose alone gave about a 2 per cent better result than did the citric acid or kaolin mixtures. There is no indication that citric acid or kaolin prolonged appreciably the period of treatment. Citric acid in 5 per cent concentration may be irritating, and apparently it did not contribute therapeutically. On the other hand, the kaolin mixture was associated with less watery vaginal discharge. Again the control comparisons were within the experimental range.

TABLE 4.—*Results of Silver Picrate and Control* Therapy in Patients with Vaginal Trichomoniasis*

	Pregnant Patients		Nonpregnant Patients		Total	
	Number	Average Weeks Treated	Number	Average Weeks Treated	Uncured	Treated
Regular therapy.....	2		20			22
Cured.....	2	6	17	7		
Uncured.....	0	0	3	14	3 (14%)	
Control therapy.....	2		17			19
Cured.....	2	5	15	6		
Uncured.....	0	0	2	13	2 (10.5%)	
Totals.....	4		37		5 (12%)	41

* Materials furnished by John Wyeth & Brother, Inc.

Table 6 shows that by pooling the data on the arsenical preparations and their respective controls little difference is revealed between them. This likewise applies to the lactose group.

COMMENT

Thus, it becomes evident that good results may be obtained with various agents in approximately 85 to 90 per cent of the patients, while the remaining 10 to 15 per cent may not remain relieved or may even fail to be improved. Even though many husbands whose wives were in the unimproved groups refused urologic examinations, three of those examined were found to have prostatic infections. Such observations have already been reported by Drummond,[8] Cornell and Riba,[9] Karnaky,[10] Adair and Hesseltine [3] and others. Allen, Jensen and Wood [11] have demonstrated the likelihood of foci in the urethra and bladder of some patients. Karnaky [10] and others have demonstrated trichomonads in the intestinal tract, but some controversy still exists as to whether any of these are the vaginal type. Therefore, it seems that to improve the results of therapy for vaginal trichomoniasis one must not only cure the disease but eliminate the source of reinfection. Reinfection may occur so frequently and rapidly that therapy is of little aid. Hence failures may represent in part persons not having proper prophylactic care or instruction against reinfection.

TABLE 5.—*Results of Lactose with Citric Acid, Lactose Alone and Lactose with Kaolin in Patients with Vaginal Trichomoniasis (After Adair and Hesseltine [3])*

	Pregnant Patients		Nonpregnant Patients		Total	
	Number	Average Weeks Treated	Number	Average Weeks Treated	Uncured	Treated
Lactose and citric acid.....	11		55			66
Cured.....	11	9	49	8		
Uncured.....	0		6	14	6 (10%)	
Lactose and kaolin..	0		21			21
Cured.....	0		19	6		
Uncured.....	0		2	9	2 (10%)	
Lactose (only).....	4		20			24
Cured.....	4	8	18	6		
Uncured.....	0		2	9	2 (8%)	
Totals.....	15		96		10 (9%)	111

TABLE 6.—*Comparison of Three Arsenical Substances, One Silver Picrate and Two Lactose Combinations with Their Respective Controls*

Substances in Question and Controls Studied	Patients		Group Totals	
	Treated	Failed	Treated	Failed
1. Acetarsone (Merck).....	17	4 (24%)		
Control.....	17	4 (24%)		
2. Acetarsone (Winthrop).....	21	2 (10%)	43	6 (14%)
Control.....	18	2 (11%)	39	6 (15%)
3. Carbarsone (Lilly).....	5	0		
Control.....	4	0		
4. Silver picrate (Wyeth).....	22	2 (14%)	22	3 (14%)
Control.....	19	2 (11%)	19	2 (11%)
5. Lactose and citric acid.....	66	6 (10%)		
Lactose and kaolin.....	21	2 (10%)	87	8 (10%)
Lactose.....	24	2 (8%)	24	2 (8%)
Totals.....			234	27

Table 6 shows that by pooling the data on the arsenical preparations and their respective controls little difference is revealed between them. This likewise applies to the lactose group.

Drummond, Cornell and Riba, Karnaky, Adair and Hesseltine and others have reported the presence of trichomonads in the urethra, bladder and prostate gland. Allen, Jensen and Wood have demonstrated the likelihood of foci in the urethra and bladder of some patients. Karnaky and others have demonstrated trichomonads in the intestinal tract, but some controversy still exists as to whether any of these are the vaginal type. Therefore, it seems that to improve the results of therapy for vaginal trichomoniasis one must not only cure the disease but eliminate the source of reinfection. Reinfection may occur so frequently and rapidly that therapy is of little aid. Hence failures may represent in part persons not having proper prophylactic care or instruction against reinfection.

The fact that vaginal mycosis did develop during or immediately after completion of therapy with silver picrate and with acetarsone indicates that the vagina was not at that time an unfavorable nidus for the fungi. This clinical observation parallels the histologic evidences that the normal vaginal epithelium in pregnancy is rich in glycogen-like material.

The biologic state of the vagina appears to be highly important. The works of Cruickshank and Sharman,[12] Plass and Oberst,[13] Adair and Hesseltine,[3] Bland and Rakoff [14] and others reveal that the vaginal acidity, the glycogen-like content of the epithelium and the bacterial and cellular flora are intimately related. The normal relationship is disturbed in vaginal trichomoniasis by a lessening of the vaginal acidity, a decrease in the glycogen-like material and a conversion of the vaginal flora to type 2 or 3.

A plea is made for the establishment of adequate and proper controls when one makes such a study and especially before recommending new preparations to members of the profession. Certainly any ethical pharmaceutic house would endorse this attitude and would cooperate if an honest evaluation was desired. In establishing controls it is urged that one adhere strictly to a routine and assign alternate cases to the control series and employ codes for the regular and control preparations whenever possible to eliminate further unavoidable personal prejudice in observations and interpretation of the therapeutic results. Moreover, before one can state correctly that any preparation is superior to others, one must have a series sufficiently large to exclude at least some of the experimental errors.

CONCLUSIONS

1. The majority of patients with vaginal trichomoniasis can be benefited by more than one therapeutic material and method.

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12. Cruickshank, R., and Sharman, A.: The Biology of the Vagina in the Human Subject, J. Obst. & Gynaec. Brit. Emp. **41**: 190, 369, 1934.
13. Plass, E. D., and Oberst, F. W.: The Hydrogen Ion Concentration of Human Vaginal Discharge, Am. J. Obst. & Gynec. **32**: 22 (July) 1936.
14. Bland, P. B., and Rakoff, A. E.: Some Bacteriologic Aspects of Trichomonas Vaginalis Vaginitis, Rev. Vida Nueva **37**: (May 15) 1936.

2. Probably in from 8 to 15 per cent of the cases of vaginal trichomoniasis particular care should be taken to eliminate foci of infection from the patient's rectum or urethra and bladder, or from the husband's urethra and prostate, and perhaps from other sources still undetermined.

3. The physiologic restoration of the vagina is apparently of paramount importance in accomplishing cures.

4. An adequate and proper control should be employed in the evaluation of the merits of any procedure or preparation.

5848 Drexel Avenue.

ABSTRACT OF DISCUSSION

DR. A. E. RAKOFF, Philadelphia: Interesting as are the uniformly high percentage of cures obtained by the various methods, my attention was attracted by the almost equally good results in the control series, treated with relatively inert substances such as kaolin. This is not in accord with my experience, since only 10 per cent of a group treated by kaolin insufflations alone responded permanently, although almost all were temporarily relieved. It is notable that the drugs employed were all in a dry form. It is the present consensus that "dry antisepsis" affords the most successful basis for elimination of the flagellates. Two preparations were insoluble pentavalent arsenicals, acetarsone and carbarsone. Dr. Bland and I made a study of these drugs plus a related soluble derivative, sodium-methylene-sulfon-amino-hydroxy-phenyl-arsonate. The latter was more effective clinically and in vitro. Dr. Hesseltine pointed out that a plan of treatment based on the associated pathologic conditions is frequently more important than the choice of an antiseptic. Thus the realization that organisms are harbored in surrounding structures may mean the difference between cure and recurrence. In my experience the urethra and para-urethral structures are the most common offenders, since trichomonads are frequently found here. I am persuaded that a few organisms harbored in the cervix may also be the source of recurrences. The male is probably a source of reinfestation in a small group of cases. I found the organisms in about 6 per cent of a group of men. The anterior urethra was much more commonly the seat of infestation than was the prostate gland. The intestinal tract is rarely if ever the source of vaginal infestation. Evidence indicates that the vaginal and intestinal trichomonads are morphologically and culturally distinct and that in this climate intestinal infestation is relatively uncommon. Experimental inoculations with the intestinal forms were unsuccessful, whereas I have produced the infestation with vaginal trichomonads. Administration of toxic drugs by mouth or bowel to eliminate an intestinal infestation whose existence is not first proved is hardly justifiable, yet many patients are treated in this fashion. Examination of the vaginal bacteria affords a reliable indication of progress during the course of treatment. Döderlein's bacilli tend to become reestablished with the disappearance of the trichomonads. Lactose or lactic acid douches are sometimes helpful in favoring this return after preliminary chemotherapy.

DR. H. CLOSE HESSELTINE, Chicago: I have not been able to confirm Dr. Rakoff's observations of finding trichomonads in the cervix, although others agree with this statement. Might not these flagellates be due to contamination by the vaginal discharge? Dr. Curtis has just reminded me that one should be very cautious as to what one considers cures. I agree heartily with his views. Cures can be established in part by repeated examination over a sufficient time. I used the words "uncured" and "cured" to simplify tables; perhaps that is incorrect. I have reviewed the cases becoming positive after intervals of two months following menstruation, and I believe it is very probable that some of these may represent reinfection rather than recurrence or exacerbation. May not these reinfections be comparable to colds? A patient may have a cold one month and again in a few weeks. Would this be a new cold or does it mean that the patient is more susceptible to colds? I feel that the same rules apply here. Until more is known about the sources of spread, some of our problems will remain unsettled. The problem of therapy is yet unsettled also.

INTENSIVE CASE FINDING WORK IN TUBERCULOSIS

HENRY F. VAUGHAN, DR.P.H.
AND
BRUCE H. DOUGLAS, M.D.
DETROIT

There has been a definite reduction in the death rate from tuberculosis in the United States, the rate now being less than one-third that which obtained at the turn of the century. However, the combat with this age-old foe of mankind has by no means been completed. Although displaced by heart disease, cancer and pneumonia at the summit of the causes of death (for all ages), in the very prime of life (from 20 to 35 years) tuberculosis still ranks first as a cause of death. There are not less than 500,000 sufferers from this disease in the United States at the present moment. Let us not be lulled into any false sense of security from past accomplishment; let us attack this disease with the same vigorous attitude with which we confront smallpox or diphtheria. Health departments have been prone to accept the crumbs from monies spent for social betterment. We have been too reticent in a fight in which modern tools are at our disposal. Possessing knowledge, we are derelict in our duty when we fail to use every artifice and ingenuity in winning and maintaining public confidence and support, which alone can provide the wherewithal to deal intelligently with a pestilential disease.

How can so many health officers remain complacent knowing full well that more than 80 per cent of all tuberculosis cases reported to health departments are already in an advanced stage? How successfully could we maintain our warfare against diphtheria and smallpox if four out of five cases were officially reported to the health department only shortly before death? Why not apply the same reasonable procedures in epidemiology to tuberculosis as we daily employ in our attack on other communicable diseases?

We can all agree that the local health officer should play a commanding part in the fight against tuberculosis, even though he may not have every detail as a function of his department. It is his responsibility to see that a program of prevention is carefully planned and executed. The school health service, the hospital care of patients, the health education program, and many other essentials may be carried on by voluntary agencies or other public agencies not a part of the health department. In every instance, however, the health officer must assume responsibility for the community program. He must be a planner, a coordinator, and take full authority and responsibility to see that the various units, organizations and individuals function smoothly in their respective fields. The ideal condition demands the establishment on a full time basis of an efficient local health service, the employment of a well trained public health administrator assisted by the essential technical personnel and blessed with reasonable financial support. A tuberculosis program cannot be successful without the cooperation of all agencies concerned with health education and the active participation of the medical profession, individually and collectively.

No intelligent progress can be made in combating an enemy unless we know his whereabouts, and in the case

From the Detroit Department of Health.
Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1937.

of tuberculosis we know the location of but a small percentage of the sources of infection—the true spreaders of disease. Are case finding facilities adequate when less than one out of every five reported cases are minimal? For each annual death from tuberculosis there should be from five to ten known living patients. To find these hidden sources of infection requires active and continuous application of case finding service in those geographic areas and in those fractions of the population in which tuberculosis is known to be most prevalent.

Health departments have done reasonably well in providing clinic facilities, dispensaries, medical and nursing service and, in most communities, an examination of school children in the danger age. Some progress has been made in providing hospital and sanatorium care. As a whole, adequate facilities do not exist for the isolation of the infectious case and for the prompt and efficient treatment of the early case. Some communities, however, have increased hospital facilities until they have two or more available beds for each annual death from tuberculosis. In an industrial city this seems to be the minimum standard compatible with adequate treatment.

Briefly stated, the task in tuberculosis control is, first, to find the minimal case and, second, to isolate the infectious case, preferably in a hospital or sanatorium, unless this can be done under suitable home conditions. In any event the open case must be taken out of circulation and cared for under conditions that will permit the employment of collapse therapy. The failure of any program that does not begin to operate until the patient is aware of symptoms has been stressed many times and was well summarized recently by Potter.[1] This author states that "64 per cent of patients consult a physician within three months after the appearance of symptoms and in 76 per cent of these a positive diagnosis was made by the family physician within three months after the first visit of the patient." In spite of this relatively prompt action on the part of patient and physician after symptoms had appeared, this author found that 84 per cent of the cases were diagnosed as advanced tuberculosis, 14 per cent were moderately advanced, and only 2 per cent were minimal. Obviously, under these circumstances it is impossible to establish an adequate control policy.

When health departments first undertook to protect children against diphtheria, school clinics were organized, for here large numbers could be readily reached. There was no difficulty encountered in securing the protection of as many as 70 per cent of such children. The prevalence of diphtheria, however, did not materially decrease until the preventive program was advanced to include the protection of the preschool child and infant, for it is among these children that most of the deaths would occur. There is no need of expending effort and money after the damage has been done. Likewise with tuberculosis, we must step up our program so as to find and serve the minimal case.

To do this involves the more effective utilization of facilities which usually are available or can readily be made available in every community. Money may be lacking; however, with state and federal assistance, this handicap can be overcome. As a matter of fact, from the point of view of economics, it must be overcome. In one large midwestern county, two and one-half million dollars of public money is being spent annually to hospitalize tuberculosis cases. This cares for 2,500 hospital beds—more than twice the annual number of deaths. In the past few years only 13 per cent of cases reported to the health department by the family physician were minimal. When, to this is added the follow up of contacts and school examinations by the health department, the percentage of minimal cases is raised to 20. There are but few American communities which report as high a percentage of early cases. Four out of five cases are already either moderately or far advanced. The average period of hospitalization for the early case is from eight to nine months. The advanced and far advanced case requires twice that period of hospitalization. It is at once apparent that by increasing the percentage of minimal from 20 to 50 the hospital load would be proportionately reduced and the community would save more than a million dollars in annual hospital bills. In other words, much if not all of the money being spent for hospitalization should never be spent. There should be no cause for its expenditure. Finding the early case will reduce the hospital load and expense and save money. The diversion of a fraction of this saving in hospital bills to adequate case finding facilities would be good economy.

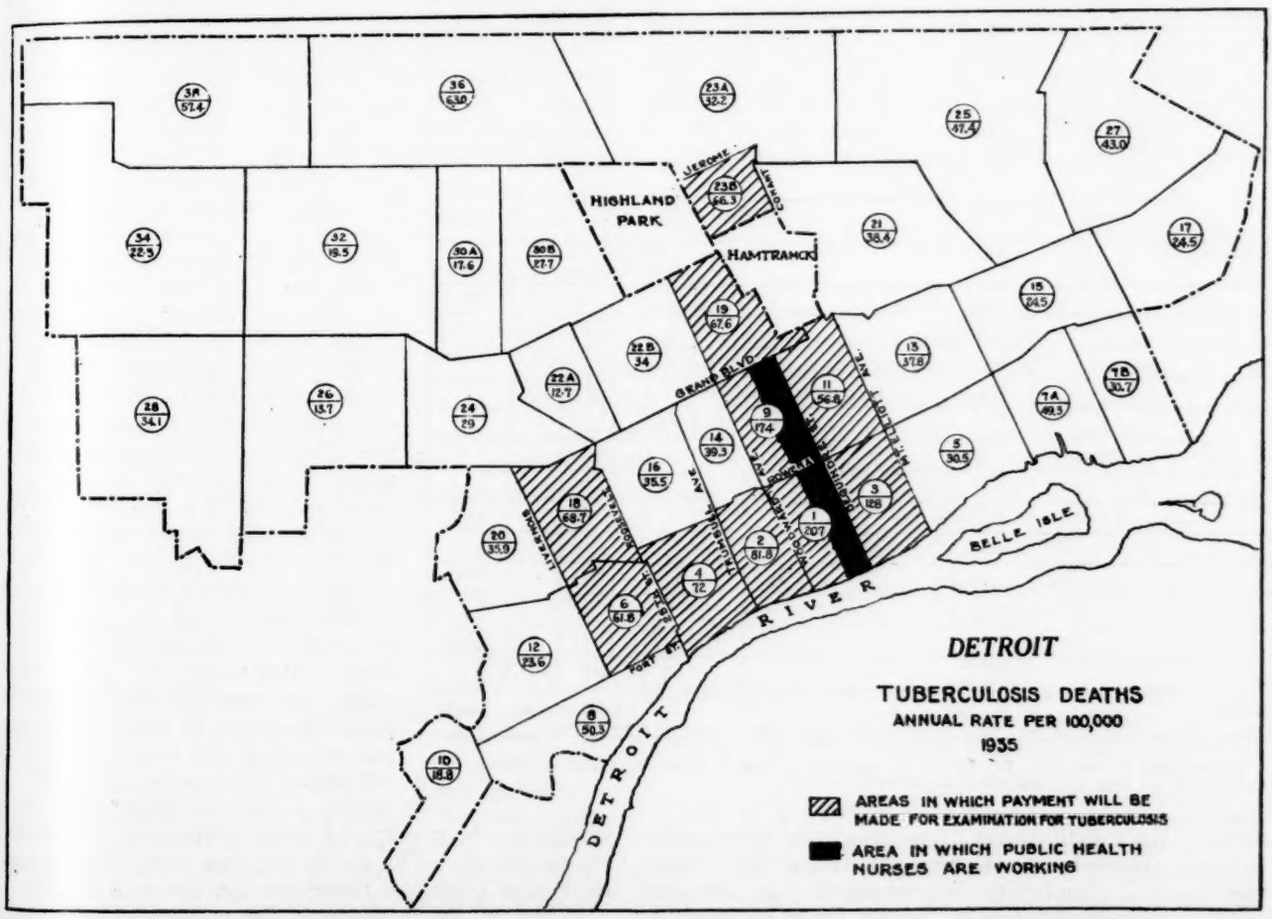
By and large, the public is not moved when health workers talk about tuberculosis as a communicable disease caused by a bacillus discovered by Robert Koch in 1882—a disease which is preventable. These facts are fairly well known to the 20 per cent of the population who are health minded. The rest do not care under any circumstances, unless it can be shown in a rather spectacular manner that they are directly involved in the hazard. Health officers must be rather startling in their statements to the public. Be spectacular but not sinful. Do not merely talk about the dangers of tuberculosis but tell the people that we are dealing with a murderer; that we are death fighters engaged in a deadly combat with a vicious foe. Be impressive but not untruthful. Borrow some of the dynamics of the commercial advertiser but do not stoop to false statements. No one may be interested in saving human lives, in reducing the death rate from tuberculosis, in expanding the life span or even in bettering the happiness of our fellow beings, but every one is interested in saving tax money. Spending $200,000 to save a million dollars annually is impressive. It was on that basis that Detroit so effectively sold its tuberculosis case-finding program that not one word of objection was offered from any source.

Fortunately, in public health work we build our programs on acceptable facts that come to us from the research institutes and centers of learning. We do not deal with philosophical hypotheses; we are concerned with truths that emanate from scientific laboratories. Granted that at times it is difficult to evaluate the effectiveness of a given control procedure, such as a four week isolation period for scarlet fever or the use of the alum picric acid spray for contacts to poliomyelitis; but study and experience generally result in reasonable practice. In the case of tuberculosis we have the facts. We know its mode of transmission; that it cannot be controlled by a case-finding program based on symptomatology; that through health education we must arouse an interest on the part of the individual in order that he will seek early medical advice; that we must have the facilities with which to provide the essential services such as diagnosis and hospital care. Correlate this knowledge with the basic statistical facts, with the economic advantage to the community, present your

1. Potter, B. P.: The Problem of Tuberculosis, J. A. M. A. **108:** 1585 (May 8) 1937.

story through the most influential educational channels in your community; then public opinion will demand reasonable financial support for your program.

Concerning the situation in Detroit, an author of national repute wrote a book; the book was read by the owner and editor of a leading newspaper which had long supported public health progress. This resulted in a series of meetings between physicians, educators, business men, manufacturers, newspaper men, public health men and women, and representatives of the public. Out of these sessions grew a program based on a common interest of all in the eradication of tuberculosis. A series of twelve first-page newspaper stories was prepared and published so as to synchronize with



May showing areas of high tuberculosis mortality in which intensive case-finding work is carried on.

radio dramatization. The community was told about the folly of spending public funds for the care of end results in tuberculosis. It was urged that a relatively small sum be spent for prevention. The appeal was reasonable; results were immediate; an additional million dollars was added to the budget of the health department to be used during the next five years to improve case-finding facilities. With the wherewithal at hand, the challenge had to be met.

Most health officers will agree with the statement that the family physician should practice preventive as well as curative medicine in his own office. After all, it is the family medical counselor who sees the early departures from normal health, both physical and mental. It is he who must be prepared to diagnose the early case of tuberculosis. As long as he considers this a disease diagnosed by such symptoms as fever, loss of weight and appetite, night sweats and possibly hemorrhage, he will be of no assistance; but place in his hands the modern technics of preventive medicine—the tuberculin test, the x-ray examination, he will become a very potent factor in the discovery of minimal tuberculosis.

Fortunately, in Detroit we have been able to develop our tuberculosis program on the strong foundation of medical participation established in 1928 in our diphtheria prevention work. It will be recalled that since that year all protective treatments have been given by physicians chosen by the family under a plan developed jointly by the Wayne County Medical Society and the Detroit Department of Health, which assures the individual that he will receive the type of service to which he is entitled, at reasonable cost or at no cost if he is financially embarrassed. At the same time the physician is assured of compensation either from the patient or from the department of health. During the first two years of the diphtheria program the health department paid for two thirds of the services, not because so many people were indigent but because there were many persons who had not learned that diphtheria prevention is a purchasable commodity as essential to the child as food, fuel, clothing or shelter. During the last two years the health department has paid for but 20 per cent of the diphtheria protective treatments known to have been administered. This indicates that the layman has not only learned the value of the service but now appreciates that it should be purchased from the family physician. There has been no decrease in the percentage of children protected during these nine years. The percentage of school children given the protective treatments has remained at a constant level of 70, the percentage of preschool children protected has increased from 30 to more than 60, and it is known

that during the past two years not less than 52 per cent of infants born in the city have been given the protective treatments by the time they have reached the age of 18 months.

Before the inauguration of this program the medical profession was prepared with regard both to the administrative details of the program itself and, what is more important, to the technic of the services that were to be rendered. The same type of approach has been applied to the tuberculosis program, and so important has become this phase of the work that a director of medical relations was appointed several months ago. He gives full time to the problem of seeing that the rank and file of physicians are conversant with the type of service which they are to render. Instead of dealing with a relatively small group of clinic physicians, we are dealing with a large group of cooperating physicians functioning through their own offices. These, in fact, become subhealth centers for the community, from which constantly flows an ever increasing volume of preventive work. The cooperation of physicians

Address 949 Osborne Dates of Visits 2-23-37 Nurse Castle
Block No. 5-435.1 Floor 2 front rear X
Family Physician Selected Physician J. J. Rucker
Address Address 5205 Hastings

	Name	Age	Color	Birthplace	Yrs. Det.	Yrs. Res.	Diph	SP	TB Test R	TB Test P	TB Test D	X-ray R	X-ray P	X-ray D	Final R	Final P	Final D
1	Goolsky, Walter	49	C	Baxter, Tenn.	2	1			1	0	7 2-24	4	0	7 2-27	4-3	0	7 3-25
2	" Annie XX	40	C	Cookville, Tenn.	2	1			0	0	7 2-24						
3	" Walter	17	C	" "	2	1			1	0	7 2-24	2	0	7 2-27			
4	" Anna Lee	15	C	" "	2	1			0	0	7 2-24						
5	" Sarah Eliz.	13	C	" "	2	1			0	0	7 2-24						
6	" Wm.	4	C	Ypsilanti, Mich.	2	1	+	0	0	0	7 2-24						
7																	
8																	
9																	
10																	
11																	
12																	

Contact Suspect Spec. Area X Other T B Census A Card 1937
Detroit Department of Health TB-0501

Tuberculosis census card, on which are recorded pertinent facts regarding the family unit residing in an area of high tuberculosis mortality.

involves the establishment of postgraduate or refresher courses. These have now been maintained for the past nine years. The health department has an adequate appropriation included in its budget for the support of this postgraduate service. Those physicians who are not wont to attend medical meetings are visited in their own offices. There is every assurance that the program and its technics are thoroughly understood.

The facts, the money and the prepared professional group being at hand, the next undertaking is to present the story to the public in such a manner as will result in service for those portions of the population in need of it. The mere presentation of facts is not sufficient; the individual must be stimulated to action; a change in behavior must be established so that he will seek service from his physician. This demands the pooling of all the interests in health education. Every individual and agency, from the family physician and dentist to the teacher, the newspaper editor and the preacher, must be integrated into the program. The tools of health education are too well known to demand elaboration. Health departments are accustomed to employ popular education which includes all means of utilizing the printed and the spoken word. The well trained public health nurse, fortified with a favorable attitude toward medical participation, has been found an invaluable ally in promoting individual health instruction. It is through her constant contact with families in the home that results are obtained.

In Detroit a determined effort is now being made to find the minimal case of tuberculosis and to provide adequate medical and hospital care for such cases. In 1936 many conferences were held with influential citizens, death fighters, publicists and educators, preparatory to the launching in November of that year of a drive to supplement the conventional services which are common to most modern health departments.

Step by step the entire medical profession was kept informed of the plans; postgraduate conferences were renewed; newspaper articles were featured; radio dramatization was emphasized. Beginning at that time and on each succeeding Wednesday evening a thirty minute broadcast has been given in the auditorium of the Detroit *News* Radio Station WWJ. The broadcasting auditorium, with a seating capacity for 340, has been used by the medical profession and other interested groups not only for the radio program but for addresses by distinguished professional men. To a preview, attended by the Surgeon General of the United States Public Health Service, were invited the physicians, that they might see and criticize in advance of formal presentation to the public. Physicians throughout the city urged their patients to read the newspaper articles and tune in on the radio. Agreements were signed by 800 physicians, who thus consented to cooperate with the county medical society and the department of health in this endeavor to discover tuberculosis in its earliest stage. In every instance the public has been urged to seek the advice and service of the family physician; but where there is no physician of choice, a list of cooperating physicians has been prepared and distributed to the public health nurses. The entire city has been divided into thirty-five areas and there is a list for each district.

When, in the judgment of the cooperating physician, the family cannot pay for the tuberculin test or the x-ray examination, the health department provides through its budget a fee of one dollar for the tuberculin test, including the reading of the result. Also, for those who give a positive tuberculin test, arrangements are made for referring the patient to one of a group of cooperating roentgenologists, this list being restricted to those who specialize in this field. Again, if financial embarrassment prevents payment for this service, the health department compensates the roentgenologist at the rate of three dollars for each flat plate examination, including a report to the family physician. The family physician again receives an additional dollar for consultation and advice to the patient. Thus it will be seen that for each individual with a negative tuberculin test the cost to the health department is one dollar. For the positive reactor the cost may be five dollars.

That portion of the program which involves the x-ray examination is under the supervision of the Detroit Roentgen Ray Society cooperating with the medi-

cal society and the department of health. When the examining physician does not provide an x-ray service in his own office, it is agreed that such cases be referred to one of a group of cooperating roentgenologists limited to specialists in this field. In turn, the Roentgen Ray Society has appointed a committee, to which is referred all doubtful and positive films taken either by physicians or by special roentgenologists, and the committee's final judgment is submitted to the examining physician.

In order that there may be provided some measurement of the success of the program, records are essential. Each physician has been provided with a card which he may keep in his own office and in addition to that there are three cards which are mailed to the health department. These double postcards can be sealed and thus avoid any embarrassment by the accidental disclosing of confidential information. The postage on the cards is paid by the department of health and the cards are mailed to the department of health irrespective of whether the patient pays or the physician bills the health department. There are individual report cards for the tuberculin test, the x-ray examination and the final consultation.

Following the special newspaper stories and radio dramas, in December 1936 the city council authorized the department of health to add approximately $200,000 per annum to its annual budget to be used exclusively for tuberculosis case-finding work. The new appropriations provide for the employment of forty-five additional public health nurses (the total number of health department nurses July 1, 1937, is 430), twelve new stenographers and statistical clerks, two new health educators (to be added to the staff of nine), $40,000 for tuberculin tests, $40,000 for x-ray examinations, $3,000 for postgraduate medical conferences, and miscellaneous items for transportation, maintenance, printing and postage. This program anticipates the supplemental expenditure of a million dollars during the next five years.

In January 1937 the personnel for the new work was engaged and underwent a period of training. By February 1, public health nurses began a house-to-house canvass in areas of high mortality. Even before the start of the field work, as a result of the newspaper and radio publicity, 2,000 tuberculin tests had been recorded by the cooperating physicians. Since February 1 (and prior to May 21) there had been recorded with the health department 33,367 tuberculin tests, of which 7,472, or 22 per cent, were positive. Of this group 5,122, or 69 per cent, had completed the x-ray study and in the latter group there had been discovered 242 new active cases of tuberculosis. This means that about 0.75 per cent of the persons examined (at all ages) was found to have active tuberculosis. Of particular significance is the fact that 43 per cent of these new cases of tuberculosis have been classified as minimal.

While it is true that there are many danger spots in tuberculosis, it was decided in the present program to limit the intensive case-finding effort to three definite undertakings. Into every physician's practice come persons with a history and appearance that suggest tuberculosis. They may be considered the suspects for whom an examination is indicated as a possible means of revealing suggested signs of this disease. The tuberculin test will generally establish the presence or absence of infection with the tubercle bacilli. This, followed with an *x*-ray examination of the chest of the positive reactor, will reveal in detail much that cannot be detected by physical examination alone. Then a special search should be made of the contacts to the active case of adult type tuberculosis. Household contacts come under immediate suspicion on two accounts —first, if the person already found has a positive sputum, one or more of the other members of the household may have acquired tuberculosis from him; second, if the person already found does not have positive sputum, one of the other members of the household may be the source of infection and should therefore be detected. There are certain groups in the community who may be regarded in almost the same light as household contacts: such, for instance, as residents in those districts of the city in which the tuberculosis mortality is high. These areas should be well known to the health department and information regarding them should be made available to all cooperating physicians. Thus the immediate objective has been to reach these three groups: first, those in the practice of the physician whom they suspect of being tuberculous; second, household contacts of definitely diagnosed cases, and, third, persons residing in areas in which the mortality from tuberculosis is excessively high.

TUBERCULIN TEST REPORT

Name Hawkins, Mery Age 32

Address 28731 Westminister Sex F

Contact X Suspect Special District

Tuberculin Test X
Positive Negative

If positive to be X-rayed by D. F. H. Kemper

Patient can pay Yes X No Signed D. C. Redfern M.D.

Date 4-14-37 Address 385 St. Theresa St.

When the physician charges this service to the City the patient or his parent or guardian in the case of a minor must sign that he cannot afford to pay.

Signature of Patient or Parent Mary Hawkins

To be mailed to Detroit Department of Health by Private Physician.

Card on which the physician reports the tuberculin test to the health department. Somewhat similar cards are used to report x-ray examinations and final consultation.

While it is granted that there are other important groups, such as school children of a selected age or grade, employees in industrial plants, food handlers, prenatal cases, diabetic patients and those who are recovering from acute infections, it was deemed advisable to undertake the case-finding work first in those groups in which the largest number of suspects and cases would be likely to be found. Within two months after the inauguration of the intensive educational work by the public health nurses in the visited group of families in the area of high mortality, 30 per cent of the Negroes (including all ages) had gone to their physician and reports had come through to the health department on the results of the tuberculin tests. Proportionately, only one-third as many white persons had responded; that is, 10 per cent of the members of the families visited. It is believed that these results obtained in the brief period of two months show a most encouraging response.

SUMMARY

It may be said that the control of tuberculosis is by no means an accomplished fact; it is especially unsound to permit the continued financial burden on our communities due to tuberculosis when the facts concerning its control are so complete; the facts should be pre-

sented to the public and the necessary financial support obtained; the habits of persons should be changed so that they will seek medical advice at a time when an early diagnosis can be made; the required diagnostic service can be provided by a group of qualified cooperating physicians serving through their own offices under a plan which functions through the organized community, especially the medical society and the health department.

3919 John R Street.

ABSTRACT OF DISCUSSION

DR. ESMOND R. LONG, Philadelphia: The Detroit plan is now well known and it is apparent from the report of Drs. Vaughan and Douglas that even within the short time since its inauguration it has already achieved a definite measure of success. The authors have brought out two important facts: (1) that the majority of cases of tuberculosis are in an advanced state when first detected and (2) that the disease is almost symptomless in the minimal stage when its detection would most readily be followed by cure. No program for the control of tuberculosis is adequate if it fails to take account of the fact that the disease is so nearly symptomless at its onset. What is commonly called its onset, the symptom complex characterized by a cough, fever and night sweats, is not the onset but a stage of active progression. Because of these facts, the usual methods of private medical practice are not sufficient. The patient will not seek the physician, because he is not aware that anything is wrong; therefore the physician must seek him. The problem is complicated by various questions of economics, medical ethics and relationships between the practicing medical profession and the official departments of health. Since, however, in the last analysis, our function as physicians is the preservation of health in the population, some way must be found to cut through all such complications. The Detroit plan seems to have been eminently successful in its dual task of case finding and harmony of medical relationship. Case finding, largely through the intensive educational campaign carried on by the National Tuberculosis Association during the last fifteen years, has become the prime objective of tuberculosis divisions of health departments. I think most of us would reverse the order of preference as given by Vaughan and Douglas and say first isolate the infectious case and, second, find the minimal cases. Basic standards exist for determining fairly closely the number of open cases in any large community. They are in the proportion of about three to each annual death from tuberculosis. We actually know and have some sort of supervision over about half of the open cases in the country today. A quick and successful campaign to find the other half will rapidly cut down the supply of new cases, which may be thought of as a yearly crop sown by the old cases. Few would quarrel with the selection of three fields for intensive case finding as given by Vaughan and Douglas; however, sooner or later we must attack the problem of tuberculosis in industry. Notable success has attended case finding campaigns in the schools and colleges, but the age period is too early to reach the bulk of tuberculosis cases. The work of the medical staff of the Metropolitan Life Insurance Company furnishes a model for what might be done for later ages. Statistics show a concentration of tuberculosis in the unskilled trades.

DR. HAVEN EMERSON, New York: Some of the best lessons in the field of public health are presented by this report of the Detroit method. The tuberculosis problem remains now, as it always has been, in the office of the private practitioner, and this method of putting on him the responsibility of finding infected persons, as well as finding sick persons, is a logical step. Finding one case of tuberculosis by the making of 111 tuberculin tests is, to my mind, an inexpensive undertaking for any health department. For every 111 intradermal tuberculin tests, one case of the disease has been found in Detroit, and of the cases found, 44 per cent are minimal. Every person in the community has a right to know whether he or she is infected with either tuberculosis or syphilis and, if infected, what was the source of the infection. Widespread use of the Wassermann and Kahn tests and of the tuberculin test is beginning to give a scientific measurement of the prevalence of infection, and the oftener these tests are made the nearer we are likely to get to the source of infection. If we can discover infection in the preschool child, we shall be just twenty years ahead of the time when the adult in industry develops the disease. Whatever may be done to discover young adults sick with tuberculosis in industrial life, there remains the job of finding the child as soon as practicable after it has been infected. When an attempt is made to trace the source of infection in a person of 25 who develops open tuberculosis in industry, there are so many uncertain factors of family and other contacts that one is baffled by time and circumstance. The lesson that Vaughan and Douglas have offered is that it is possible to save on the cost of treatment by heavy investment in the discovery of infection. I believe that economy as well as self interest points directly to the following of the Detroit method, and that the best message that can be given to the members of the American Medical Association is that every physician should persuade his patients to be intelligently curious about their infection with the tubercle bacillus or freedom from it and, if they prove to be infected, to be unsatisfied until the probable source of their infection is traced.

DR. E. R. HAYHURST, Columbus, Ohio: For many years tuberculosis was the leading cause of death among the gainfully employed. It stands second to heart disease today. The papers presented in this section have emphasized tuberculosis in relation to the Negro, to industry and to fatigue, but thus far it has not been possible to evaluate industrial fatigue. The physiologists may some day evolve a method of detecting fatigue and of separating its manifestations from those of other conditions, following which there may be a measuring stick for industrial fatigue. While not dismissing the great importance of infection and cross-infection, I think the relation of tuberculosis to fatigue is very prominent. Another factor which is notable with industrial workers is that they do not know or appreciate protective diets, and they are beset with a confusing commercialized propaganda regarding diet. There is a tremendous field here for education which might be worked out by such a scheme as Detroit is using to build better resistance in the industrial population.

DR. J. I. LINDE, New Haven, Conn.: Having practiced pediatrics more than twenty years, I should like to make some statements. One is that the authors have recognized the fact that the private physician is the backbone of public health. I don't know who made that statement, but they have recognized that. The second is that Vaughan and Douglas have given to the private physicians the kind of state medicine they like.

DR. A. E. JAFFIN, Jersey City, N. J.: I am sure we all feel that the ideal arrangement would be for every physician to become a public health officer, at least as far as tuberculosis is concerned. In the northern part of New Jersey, where I have had the opportunity for twenty-odd years of being connected with tuberculosis clinics, we have faced that problem. Do the authors expect to get the majority of doctors actively and continuously interested in cooperating as they wish them to? Can the public be expected to remain health conscious long enough to be retested with tuberculin or roentgenographed more or less regularly when necessary? Those who are negative this year may not be negative next year. Will there be a repetition of this more or less constant survey? How is the teen-age problem met in Detroit, particularly in the high school group? We felt that the most rapid approach for the sake of the greatest good would be a survey of the teen age by testing our high school children in Jersey City, some 17,500. After getting consents from 90 per cent, we did 15,000 tests, and all those which were positive to tuberculin were roentgenographed by the rapid paper method. The films are now being read. In this undertaking we had the cooperation of the county medical society. A number of men volunteered to take the necessary training to qualify them for testing. They were paid out of funds provided by the Tuberculosis League from Christmas seal sales while the county and city paid for the films. Some thirty-six men responded for this work. Less than 10 per cent of the county physicians volunteered or showed an active interest in this undertaking—a rather small percentage. We found great difficulty in getting members of

our county society sufficiently interested in undertaking this Detroit plan, and I was very much interested in hearing what Vaughan and Douglas had to say. What will the solution of the problem be so far as the teen-age children are concerned, in whom I feel lies the most fertile soil for the early recognition of the future cases of active pulmonary tuberculosis?

DR. L. M. ROHR, Brooklyn: In Williamsburg-Greenpoint we have tackled this tuberculosis problem in a very different way because of a very small budget, 51 cents per capita. We haven't obtained the wonderful cooperation Vaughan and Douglas speak about. We have organized a Chest Consultation Service. We invite the private physician to use our tuberculosis service as his own. We give his patient a complete physical examination, x-ray service, fluoroscopic service and sputum examination. The examination is confidential, and he receives a confidential communication by mail. The county medical society utilizes and approves this method. We use the county society to notify the physician that this service is available, and it is surprising the great number of cases that are sent to us. Ten per cent of the cases referred to the Chest Consultation Service are found to show some stage of tuberculosis, and about 15 per cent of those cases are in the minimal stages. The private physician still needs much education. We are therefore using our tuberculosis services as teaching centers. Our tuberculosis clinics are now open to groups of physicians, six or eight at a time. We give them about three months' intensive instruction, and then to some of the most satisfactory we offer clinical positions in the health department. Through that interest in tuberculosis work in the borough of Brooklyn we have been able to organize the Brooklyn Thoracic Society. We are doing all sorts of things to interest the private practitioner in our work and to get the cases early. The authors present a very fine, utopian picture for the private practitioner. We have in a small measure made the private practitioner's office a health center. In Williamsburg-Greenpoint Health District, we found that only about 40 per cent of the children had been immunized against diphtheria. Through the efforts of the Kings County Society we interested the private practitioners of the district, and in 1935 the private practitioners of the district immunized 13,000 children. Our death rate became nil in 1936. Our case rate was down to 46. Previously it had been 130 cases, with four deaths.

DR. HENRY F. VAUGHAN, Detroit: May I say to Dr. Rohr I do not believe there is any city but that must do something of this character, irrespective of whether one is spending 51 cents or a dollar per capita. The money must be found somewhere; otherwise large sums of money will continue to be wasted in the end results of tuberculosis. In answer to Dr. Long I wish to state that, being a public health man, I think we need to find the minimal case first. We have an Industrial Hygiene Division, under the able direction of Dr. C. P. McCord, and the industrial program is operating in cooperation with this tuberculosis case-finding program. But let us not lose sight of the fact that everybody in Detroit is interested in industry. We have nothing there but industry, and the most economical thing we could do was to deal with the hot spots, readily isolated from the rest, where most of the tuberculosis would be found. I could list twelve or fourteen different classes of persons who need special attention, prenatal cases, the diabetic, persons recovering from some acute infectious disease, industrial workers, the food handlers and children of the teen age. These are all important. We took the three classes (1) contacts, (2) suspicious cases and (3) individuals residing in areas of high mortality as being the most productive of new cases of tuberculosis and the most rapid way of isolating the infectious case from the community. We should have emphasized, as we did in the complete paper, that there is nothing in the program which detracts from our usual conventional procedures. This program is not a substitute for what the health department has been doing for years. We are still tuberculin testing annually 20,000 school children through the local tuberculosis association. The clinics are being operated and are used for teaching purposes. We must have such teaching facilities or we could not provide instruction for cooperating physicians, so in this respect our plan is the same type of program referred to by Dr. Rohr as existing in New York. I feel that the evidence brought forth by our diphtheria program shows that the interest of the physician can be continuous, and as for the interest of the public, as a matter of fact, only 18 per cent of the diphtheria immunizations are being paid for by the health department. This indicates the willingness of the public to cooperate, and the constant increase in the number of children immunized at the susceptible age would indicate likewise. As far as the physicians are concerned, there is no question about their wholehearted cooperation.

SYPHILIS IN RELATION TO THE PREVENTION OF BLINDNESS

A STUDY OF 100,000 CASE RECORDS

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According to recent statistics,[1] syphilis accounted for 5.3 per cent of the blindness among 2,702 children in schools for the blind. This study indicated that syphilis is probably responsible also for a large proportion of the blindness now classified as congenital or hereditary. Other investigators[2] have determined that blindness among pupils in schools for the blind and among persons applying for pensions for the blind is attributable to syphilis in percentages varying from 3.4 to 15. Cowan and Sinclair[3] reported that among 6,000 applicants for pensions for the blind in Pennsylvania, 566 eyes, or 9.4 per cent, were affected with syphilis. In a recent communication, however, Cowan[4] stated that this estimate is low because it represents merely the cases in which the examiner stated that syphilis was an etiologic factor, whereas, to cite only one source of possible error, many cases of interstitial keratitis were etiologically undiagnosed.

A number of studies relative to the incidence of syphilis among patients suffering from various types of eye diseases have been made. Authoritative data have been presented to indicate the seriousness of syphilis as an etiologic factor in such diseases. However, information is not available from the study of a large series of cases concerning practices in the diagnosis, treatment and follow-up of patients who have syphilis or who may acquire syphilitic eye lesions. These practices include routine serologic tests for syphilis, follow-up of patients with eye disease who have positive Wassermann reactions, examination of immediate relatives, especially husbands, wives and children, of patients with evidence of syphilis, and the use of accepted methods of treating syphilitic eye diseases or eye diseases complicated by syphilis. This study was prompted by the desire to obtain such data so that the number of cases of blindness and marked diminution of vision among persons who have acquired or congenital syphilis might be reduced.

ORGANIZATION OF THE STUDY

To carry out this investigation, a special Committee on the Study of Syphilis and Eye Diseases was organ-

Read before the Section on Ophthalmology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1. Berens, Conrad; Kerby, C. Edith, and McKay, Evelyn C.: The Causes of Blindness in Children; Their Relation to Preventive Ophthalmology, J. A. M. A. **105**: 1949 (Dec. 14) 1935.
2. Lamb, H. D.: Causes of Blindness in Youth, J. Missouri M. A. **23**: 101 (March) 1926; discussion, 1926 Conference of the National Society for the Prevention of Blindness.
3. Cowan, Alfred, and Sinclair, S. M.: Causes of Blindness in Pennsylvania from the Medical and Social Aspects, Tr. Sect. Ophth., A. M. A., 1936, p. 74.
4. Cowan, Alfred: Personal communication to the authors, April 30, 1937.

ized as a subcommittee of the Social Hygiene Committee of the New York Tuberculosis and Health Association.[5] The major objectives of the Committee on Syphilis and Eye Diseases were the following: (1) to obtain accurate diagnoses of syphilitic eye diseases, (2) to evaluate routine Wassermann or similar serologic tests on patients with eye disease, (3) to determine minimum social service and follow-up requirements, (4) to help in establishing standards for procedures at eye clinics and (5) to standardize the treatment of syphilitic eye diseases.

Survey Form

I. Case No.... Age.... W ( ), N ( ), S ( ), M ( ), W ( ), D ( )
II. Hospital Patient.... Clinic Patient.... Both....Date Admitted...
III. *Personal History:*
Syphilis: Genital Lesions.... Skin Lesions.... Ulcers.....
Treatment: Where..... Began.....
How Many Courses:..... Drugs.....
Under Treatment at Present?.....
Stillbirths? .....
IV. *Family History:*
(a) Syphilis in Father..... Mother.... Patient's Children....
(b) History of Locomotor Ataxia.... Dementia Paralytica.....
(c) Cause of Death of Father..... Mother.....
(d) Brothers..... Sisters.....
(e) Children .....
V. *Clinic Findings:*
Tabes Dorsalis (Locomotor Ataxia) ( ); Dementia Paralytica (General Paralysis of Insane) ( ); Taboparesis ( ); Meningovascular Syphilis ( ); Congenital Syphilis ( ); Gumma ( ); Other:
VI. *Laboratory:*
Wassermann ( ); Kahn ( ); Neg. ( ); Doubt. ( ); Pos. ( )
Spinal Fluid: Colloidal Gold.. Neg. ( ); Doubt. ( ); Pos. ( )
Dark Field: Neg. ( ); Pos. ( )
Other Serologic Tests.....
VII. *Syphilitic Manifestations in Eye:*
Iritis ( ); Iridocyclitis ( ); Retinitis ( ); Optic Neuritis ( ); Choroiditis ( ); Optic Atrophy ( ); Any Ophthalmoplegia ( ); Argyll Robertson Pupil ( ); Interstitial Keratitis ( ); Other:
VIII. *Diagnosis:* On Admission.....On Discharge.....
IX. *Follow-up:*
(a) For Eye .....
(b) For Syphilis .....
X. *Disposition of Case:*
(a) Treated in Hospital-Clinic ( ); Department.....
(b) Referred to.....
XI. *Result of Syphilis Treatment on Eye Condition:*
(a) Improvement ( ); (b) No Improvement ( )
(c) Remarks .....
XII. *Summary*

In the pursuit of these studies, certain working objectives were set up. These were as follows: (1) to study the method in which records are kept at various eye clinics in New York City, with special reference to syphilis and complications involving the eyes, (2) to analyze the material recorded in the clinical records, (3) to determine whether the serologic tests for syphilis and other laboratory tests are routine measures in cases of eye diseases that may be caused by syphilis, (4) to evaluate the procedures followed in caring for patients with eye disease who have positive Wassermann reactions, (5) to learn whether clinics utilize sufficient follow-up personnel in such cases and (6) to collect the statistical material necessary to determine the percentage of the various eye diseases which may be caused by syphilis.

METHOD OF STUDY

In carrying out this study of syphilis and eye diseases, the records of five important eye institutions in New York City were analyzed and tabulated. The total number of records studied was over 100,000. Records of patients were examined in order that we might obtain the following information: (1) personal history in relation to syphilis, (2) family history, (3) clinical observations, (4) laboratory observations, (5) syphilitic manifestations of the eye, (6) diagnosis, both on admission and on discharge, (7) social service and follow-up for the eye condition and for the syphilitic condition, (8) disposition of the case and (9) effect of syphilitic treatment on the eye condition.

The records were found to be incomplete as well as inaccurate. In 1923 a special study[6] of the medical histories of ten representative ophthalmologic institutions in New York City also demonstrated serious deficiencies in the records. The history was recorded in only 55 per cent, a tentative or final diagnosis in 68 per cent, the treatment in 76 per cent, the vision in 78 per cent, the refraction in 45 per cent and examination of the muscles in 0.44 per cent.

In seeking data on syphilitic manifestations in the eye from a study of 100,000 records, we placed special emphasis on cases in which the following diagnoses[7] were indicated: (1) iritis, (2) iridocyclitis, (3) retinitis, (4) optic neuritis, (5) choroiditis, (6) optic atrophy, (7) ophthalmoplegia, (8) Argyll Robertson pupil and (9) interstitial keratitis, as well as other diseases. A special form was prepared for this study.

RESULTS OF THE STUDY OF 100,000 CASE RECORDS

The summary of approximately 100,000 case records shows that a total of 5,969 patients, or about 6 per cent, presented diagnoses which were classified by the special Committee on the Study of Syphilis and Eye Diseases as possibly having syphilis as an etiologic factor. However, of the 2,237, or 37.5 per cent, who were given Wassermann tests, 444, or 19.9 per cent, had positive reactions.

Since the method of keeping records varied widely in the five institutions studied, only the most general conclusions may be drawn. The results of the study may be stated briefly in the order of their appearance on the survey form.

Personal Histories.—The personal histories were inaccurate, with meager information concerning syphilitic lesions and the amount of antisyphilitic treatment that patients received. However, our study shows that the full term stillborn children of the patients numbered forty, and the premature stillborn children nine (table 1).

Family Histories.—The family histories furnished inadequate information regarding the presence of syphilis in other members of the patient's family. Also, evidence of neurosyphilis, for example, tabes dorsalis or dementia paralytica, was not recorded in a sufficient number of cases. The statistics in table 1 indicate that the wives and mothers of syphilitic patients gave birth to thirty-four full term stillborn children. Premature stillborn children were recorded in these families twelve times, syphilitic insanity twice and death attributable

TABLE 1.—*Family and Personal History of Patients Who Had Syphilitic Eye Lesions*

	Number of Patients
Full term stillborn children of patients	40
Premature stillborn children of patients	9
Premature stillborn children of patients' mothers	7
Premature stillborn children of patients' wives	5
Full term stillborn children of patients' mothers	25
Full term stillborn children of patients' wives	9
Syphilis in entire family	12
Syphilitic insanity in patients' family	2
Syphilitic deaths in patients' family	13

5. Members of the subcommittee are Drs. John H. Dunnington, Henry R. Skeel, Francis W. Shine, Jacob A. Goldberg (secretary) and Conrad Berens (chairman).

6. Berens, Conrad, and Sturges, G. E.: Case Records in Ophthalmological Clinics, Arch. Ophth. **52**: 259 (May) 1923.

7. Tabulation of diagnoses was made after consultation with an advisory committee representing the National Society for the Prevention of Blindness, the American Social Hygiene Association and the Committee on Syphilis and Eye Diseases.

to syphilis thirteen times. Table 1 likewise shows that syphilis was present in the entire family in twelve instances. When these observations are considered in relation to the estimate of Lewis [8] that from 50 to 75 per cent of the syphilitic children born of infected women acquire serious diseases of the eye and the statement of Holloway [9] that sooner or later definite ocular evidence of syphilis is apparent in 75 per cent of congenitally syphilitic persons, syphilis assumes greater significance as a factor in blindness.

The great importance of the treatment of syphilitic pregnant women was stressed by Paley,[10] who studied 617 women who were treated with neoarsphenamine and bismuth compound during pregnancy. The results showed that adequate antisyphilitic therapy during pregnancy greatly reduces the number of living syphilitic babies, miscarriages and stillbirths and the infant mortality in the first two months of life. It was definitely proved that antisyphilitic therapy during pregnancy is effective regardless of the duration of syphilis in the mother. The effect of syphilis in the father was also determined, and the statistics showed that when the father also was syphilitic the incidence of syphilis in the children was higher.

One of us [11] made a study of 653 pregnant women in seven antepartum clinics in New York City. Only 22.5 per cent were treated before the fifth month of pregnancy. The antisyphilitic treatments administered were possibly too few in number, as 36.7 per cent of the women were given five treatments or less and 56.3 per cent nine treatments or less. In the cases in which complete records were available, there were 426 normal births and forty-five fetal deaths. The early treatment of prenatal syphilis will undoubtedly result in saving lives, in reducing various manifestations of late syphilis, especially blindness, and in preventing congenital syphilis from affecting many children.

General Physical Examinations in Patients with Syphilitic Eye Lesions.—Although there were practically no records of clinical observations in two institutions, it is noteworthy that a summary of the records of the remaining three institutions shows that meningovascular syphilis was present in twelve cases, congenital syphilis in fifty-one, tertiary syphilis in twenty-four, tabes dorsalis in fifteen, secondary syphilis in nine and primary syphilis in nine. Seven patients gave evidence of cerebrospinal syphilis. If more general physical examinations had been recorded, the relationship of cause and effect between syphilis and eye diseases could have been more completely studied.

Laboratory Examinations.—The record of Wassermann tests made on patients who were classified as having eye lesions probably of syphilitic origin indicates that only 2,237 (37.5 per cent) were given the benefit of a serologic test for syphilis. Of this number 444, or 19.9 per cent, were found to have positive Wassermann reactions (table 2).

Syphilitic Manifestations in the Eye.—Data regarding the diagnosis and examination of the eye lesions were often inaccurate and insufficient. However, in our study the largest percentages of positive Wassermann reactions were recorded for patients with the following diagnoses: interstitial keratitis, 53.8 per cent; keratoiritis, 50 per cent; Argyll Robertson pupil, 41.7 per cent; optic neuritis and papillitis, 20 per cent; iritis and iridocyclitis, 15.4 per cent; uveitis, 14.2 per cent, and choroiditis, 12.4 per cent.

Serologic tests for syphilis, even in cases in which the eye disease listed was most likely to be etiologically related to syphilis, were not made as a matter of routine in any of the five clinics studied. The percentage of serologic examinations varied from 22.6 to 78.8 for the group of eye diseases in which syphilis might be the cause. In one clinic only 51.6 per cent of the patients with interstitial keratitis were given a Wassermann test. In the clinic presenting the second highest record of serologic tests, 100 per cent of the patients with interstitial keratitis were tested serologically. Of patients with optic atrophy 94.7 per cent had Wassermann tests. The record for serologic examinations in cases of chorioretinitis was 92.6 per cent, in cases of retinitis 90.9 per cent and in cases of iritis 87.8 per cent. In the clinic which achieved the highest total percentage of serologic testing, 78.8 per cent of all patients with eye disease of probable syphilitic origin were given serologic tests for syphilis.

Gratiot [12] expressed the opinion that Wassermann tests should be made in all cases of disease of the eye in which syphilis may be a causative factor. He reported a positive Wassermann reaction in 20 per cent of the cases of disease of the cornea, in about 38 per cent of the cases of iritis and in thirty-one of forty-

TABLE 2.—*Summary of Eye Diseases with Possible Syphilitic Involvement*

Diagnosis	Total Cases	Wassermann Tests Made		Positive Wassermann Reactions	
		Total	%	Total	%
Iritis	876	383	43.7	59	15.4
Iridocyclitis	382	110	28.8	17	15.5
Retinitis	558	210	35.6	22	10.5
Pigmentosa	166	69	41.6	6	8.7
Hemorrhagic	65	12	18.5	..	....
Neuro	30	15	50.0	5	33.3
Chorio	421	187	44.4	26	13.9
Proliferans	8	2	25.0	..	....
Circinate	3	2	66.7	..	....
Albescens	25	2	8.0	2	100.0
Choroiditis	513	169	32.9	21	12.4
Keratitis	411	133	32.4	31	23.3
Interstitial	245	173	70.6	93	53.8
Punctate	33	6	18.2	1	16.7
Dendritic	36	1	2.8	..	....
Marginal	151	15	9.9	1	6.7
Sclerosing	29	5	17.2	1	20.0
Phlyctenular	38	7	18.4	3	42.9
Bullous	11	3	27.3	..	....
Fascicular	4	3	75.0	..	....
Vascular	1	..	....	..	....
Profunda	25	2	8.0	..	....
Hypopyon	25	2	8.0	1	50.0
Herpetic	10	2	20.0	..	....
Conjunctivitis	28	6	21.4	1	16.7
Lattice	1	..	....	..	....
Iritis	25	16	64.0	8	50.0
Ophthalmoplegia	62	20	32.3	7	35.0
Paralysis (not specified)	96	21	21.9	3	14.3
Third nerve	14	8	57.1	3	37.5
Superior rectus	41	16	39.0	2	12.5
Inferior rectus	45	30	66.7	6	20.0
Left lateral rectus	41	12	29.3	3	25.0
Right lateral rectus	23	9	39.1	3	33.3
Facial paralysis (Bell's palsy)	5	4	80.0	1	25.0
Argyll Robertson pupil	17	12	70.6	5	41.7
Optic atrophy	569	288	50.6	72	25.0
Optic neuritis and papillitis	93	50	53.8	10	20.0
Retrobulbar neuritis	89	33	37.1	3	9.1
Uveitis	161	113	70.2	16	14.2
Hyalitis	10	1	10.2	1	100.0
Cyclitis	20	3	15.0	..	....
Ptosis	257	14	5.5	3	21.4
Papilledema	65	17	26.2	1	5.9
Episcleritis	225	51	22.7	7	13.7
Cellulitis (orbit)	16	..	....	..	....
Total	5,969	2,237	37.5	444*	19.9

* This total does not include twelve cases in which no diagnosis was given.

8. Lewis, Park: Interstitial Keratitis, a Modern Anachronism, Am. J. Ophth. **17**: 444 (May) 1934.
9. Holloway, T. B.: Why Have Ocular Diseases? Am. Health Cong. Series, vol. 4.
10. Paley, S. S.: Syphilis in Pregnancy, New York State J. Med. **37**: 585 (March 15) 1937.
11. Goldberg, J. A.: Prevention of Congenital Syphilis, New York State J. Med. **34**: 290 (April 1) 1934.
12. Gratiot, H. B.: Routine Wassermann Tests in Ophthalmology, J. Iowa M. Soc. **13**: 186 (May) 1923.

three cases of primary atrophy of the optic nerve, in ten of which the condition was congenital.

In table 3 the number of positive and negative Wassermann reactions in the families of the syphilitic patients under consideration is recorded. Though these data are incomplete, they are at least suggestive of the conditions existing in the families of syphilitic patients.

Social Service and Follow-Up.—The lack of recorded data rendered it impossible for us to analyze completely the social service and follow-up system. For example, in one institution, in which 145 patients had positive Wassermann reactions, there was no record of a follow-up service in 132 cases. In another institution, with 134 patients, no follow-up was recorded in fifty cases. In still another, with forty-one patients, no follow-up was recorded in fifteen cases. In the institution presenting the best record only eighteen of 100 patients had not been followed up.

TABLE 3.—*Wassermann Reactions in Families of Syphilitic Patients*

	Positive	Negative
Fathers	26	18
Mothers	59	17
Children	16	8
Sisters	18	3
Brothers	20	4
Husbands or wives	21	6
Total	160	56

TABLE 4.—*Social Service and Follow-up Work in Cases of Eye Disease—Disposition of Patients with Positive Wassermann Reactions*

	Clinic					
	1	2	3	4	5	Totals
Under treatment	..	48	..	47	6	101
Discharged	..	1	..	3	..	4
Failed to attend	..	5	..	14	..	19
No record	86	23	20	9	26	164
Referred to other hospitals	33	22	11	3	4	73
Referred to department of hospitals	..	..	2	5	..	7
Referred to department of health	14	33	6	3	..	56
Referred to private physician	12	1	2	5	..	20
Transferred to state hospital	..	..	..	3	..	3
Died: cause, syphilis	..	1	..	8	..	9
						456

Although the importance of social service in relation to syphilis in eye clinics has long been stressed,[13] the financial support necessary to provide for this service is not available to all institutions. The problem is economic as well as social. The contribution toward effective prevention of syphilis of only a fraction of the money now expended on the support of syphilitic persons would markedly decrease the number of syphilitic tragedies which terminate in blindness. The institution of adequate social service and active follow-up work in all hospitals and clinics would insure completion of treatment so that complications involving the eyes which might result in blindness could be prevented.

SUMMARY

We have pointed out that, although the importance of syphilis in the causation of certain eye diseases is recognized, little information is available from a study of a large series of cases concerning clinical practices regarding the diagnosis, treatment and follow-up of patients who have eye lesions that may be caused by syphilis or who have relatives who may be syphilitic. These data are important if better methods of attacking the problem of syphilis and preventing blindness are to be instituted.

Approximately 6 per cent of the 100,000 patients in the five institutions were reported as having eye lesions which might have syphilis as an etiologic factor. Data in relation to the personal histories, family histories and previous medical histories were generally inaccurate and insufficient. However, in spite of this, our study revealed that the full term stillborn children of these patients numbered forty and the premature stillborn children nine. It was found that in twelve instances syphilis affected the entire family and that thirteen deaths in the patients' families had been caused by syphilis. It was also shown that wives and mothers of syphilitic patients had given birth to thirty-four full term stillborn children and twelve premature stillborn children.

Previous medical histories and clinical observations in cases of syphilitic disease were inadequate, for congenital syphilis was recorded in only fifty-one cases and tertiary syphilis in twenty-four, while tabes dorsalis was observed in fifteen. Only 37.5 per cent of the patients in whom syphilis may have been an etiologic factor were given the benefit of serologic tests. Approximately 20 per cent of the Wassermann reactions in these cases were positive. Serologic tests were not made as a matter of routine in any of the clinics on the patients who had eye lesions that were considered to be of syphilitic origin. The percentage of serologic examinations made varied from 22.6 to 78.8.

It is cause for serious consideration that in one clinic only 51.6 per cent of the patients with interstitial keratitis were subjected to Wassermann tests. This is particularly important in view of the fact that 53.8 per cent of the entire group of patients with interstitial keratitis had positive Wassermann reactions and that 50 per cent of those with kerato-iritis showed positive reactions. The next highest percentage of positive Wassermann reactions, 41.7, was recorded for patients with Argyll Robertson pupils. It is important that 14.2 per cent of those with uveitis and 15.4 per cent of those with iritis and iridocyclitis had positive reactions. As would be expected, the percentage of positive reactions in the group with choroiditis was lower, only 12.4. It is most unfortunate that more Wassermann tests are not made in families of syphilitic patients because, although only 216 tests were made, 160 of the reactions were positive. The highest percentage occurred in mothers, approximately 37.

The great importance of the treatment of pregnant women has been clearly demonstrated by Paley,[10] who showed that adequate antisyphilitic therapy during pregnancy greatly reduces the number of living syphilitic babies, miscarriages and stillbirths, as well as the infant mortality in the first two months of life.

One of the most serious failures in several of the clinics, from the standpoint of the prevention of blindness, was in the social service and follow-up work. Only thirteen of 145 patients with positive Wassermann reactions were followed up in one clinic. No doubt the financial factor is an important cause for the failure to provide social service and follow-up work. However, after long study of this subject,[14] it is our conviction

13. Carvill, Maud, and Derby, George S.: Interstitial Keratitis, Tr. Sect. Ophth., A. M. A., 1925, p. 260. Berens, Conrad, and Taylor, M. K.: Social Service and Follow-up in Ophthalmology, Hosp. Soc. Serv. **16**: 89 (Aug.) 1927.

14. Taylor, M. K., and Berens, Conrad: The Importance of Social Service and Clinic Management in Ophthalmological Clinics, New York State J. Med. **28**: 1470 (Dec. 15) 1928. Berens, Conrad: How Can Adequate Medical Social Service Be Provided in Eye Clinics, Hosp. Soc. Serv. **22**: 275 (Oct.) 1930; The Importance of Social Service and Follow-up in Preventing Blindness, Sight-Saving Rev. **2**: 83 (June) 1932; What Can an Organization for the Blind Do in Preventing Blindness? ibid. **3**: 186 (Sept.) 1933. Berens and Taylor.[12]

that much of the blame must be borne by physicians for their lack of interest in or lack of complete understanding of the importance of this work.

CONCLUSIONS AND RECOMMENDATIONS

A study of 100,000 records shows that 5,969 patients (approximately 6 per cent) had eye lesions which may have had syphilis as an etiologic factor. However, in many cases the diagnoses were omitted from records and the clinical observations were so incomplete that accurate diagnoses could not be made.

From this study of syphilis in five eye institutions, the following conclusions and recommendations seem justified:

1. The personal histories, although inaccurate and lacking in detail, showed that the patients with syphilitic eye lesions gave birth to forty-nine stillborn children. In order that more of these valuable data may be obtained, it is recommended that personal histories be more accurate and detailed, special emphasis being placed on the history of syphilis, genital lesions, cutaneous lesions and ulcers and on the exact amount of treatment received and where such treatment was given.

2. The family histories were inaccurate but the small group recorded showed that the relatives of patients had forty-six stillborn children, that syphilis affected the entire family in twelve instances and that there were two cases of syphilitic insanity and thirteen syphilitic deaths in the patients' families. It is recommended that the family histories of patients with eye lesions which may be caused by syphilis include data regarding syphilis in the father, mother, children and other relatives. A record should also be made of a history of dementia paralytica, tabes dorsalis and other syphilitic nervous diseases. It is important to record the cause of death of members of the patient's immediate family.

3. The clinical, medical and neurologic data were most incomplete, as congenital syphilis was recorded in only fifty-one cases, meningovascular syphilis in twelve, tertiary syphilis in twenty-four, tabes dorsalis in fifteen, secondary syphilis in nine, primary syphilis in nine and cerebrospinal syphilis in seven. It is recommended that more careful attention be given to the medical and neurologic data in cases of syphilitic eye diseases.

4. Laboratory examinations showed that Wassermann tests were made in only 2,237 (37.5 per cent) of the 5,969 cases in which the diagnosis was an eye disease of possible syphilitic origin. Of the patients tested, 444, or 19.9 per cent, had positive reactions. It is recommended that a Wassermann test be performed on all patients with eye lesions possibly syphilitic.

5. The data regarding diagnosis and examination of the eye lesion were often inaccurate and insufficient. It is recommended that greater care be exercised in recording the exact diagnosis on admission and discharge from a hospital or clinic.

6. The social service and follow-up work in relation to the eye disease and to syphilis showed an appalling lack of thoroughness. Although all the institutions had social service departments, only a small percentage of the patients with positive Wassermann reactions were followed up. In one institution, only thirteen patients of 145 were rendered this service. Therefore, it is recommended that all patients with positive Wassermann reactions who have syphilitic eye lesions be followed up and that a study of the patients' relatives also be instituted.

7. The great importance of social service work in the prevention of unnecessary blindness is evident from this study, but recorded data were incomplete. It is recommended therefore that the social service data indicate the reference of the patient to other hospitals or clinics or to a physician and the final discharge.

8. Notes on progress often failed to indicate the result of antisyphilitic treatment from the point of view of the eye or from the serologic standpoint. Therefore, it is recommended that these data be more complete.

If much unnecessary blindness caused by syphilis is to be prevented, the recommendations embodied in this study must not only be considered seriously but must be carried out in a systematic manner in hospitals and clinics. Especial attention must be given to the follow-up of individual patients and their families.

35 East Seventieth Street.

ABSTRACT OF DISCUSSION

DR. E. V. L. BROWN, Chicago: These records are characterized by the writers of this paper as inadequate and inaccurate. Some 6,000 cases of the 100,000 were diagnosed as syphilitic, but a Wassermann test had been made in less than half. Notes concerning the primary, secondary and tertiary nature of the syphilis present were lacking in 97 per cent of the cases, and histories of syphilis in the patient or his family were lacking in 98 per cent. Eye examinations were likewise often inaccurate and insufficient. Interstitial keratitis was diagnosed in 240 cases, yet the fact that the Wassermann reaction was positive in only 54 per cent of them leads one to suspect that there were actually only about 150 real cases of interstitial cases in the group, because Igersteiner gives the Wassermann reaction as positive in 91.9 per cent. The conclusion is hard to escape that a large number of the cases of interstitial keratitis were diagnosed by these dispensaries when they were not interstitial keratitis at all. There is no reason to believe that the rest of the work was any better, and the records cannot by any stretch of the imagination be considered as a contribution to our knowledge of the subject of syphilis in relation to the eye as given in the title of the paper. This is not the fault of the authors, who apparently recognized this fully and placed a goodly part of the blame on the lack of funds for social service. Four or five clinics had social service, but it was spread out pretty thin; for although it was supposed to cover matters of attendance, treatment, discharge and reference to other hospitals, to the department of health, to the department of hospitals, to a state hospital or to a private physician to record syphilis as a cause of death, even a single such note was found recorded in only 8 per cent of the cases. In one line the authors do get at the heart of the matter, for they say "much of the blame must be borne by the physicians." But they offer no remedy or suggestion of any kind. In my opinion the reason for poor records is to be found in the widespread failure to recognize the dispensary as the crux, the heart, of the eye clinic, and the failure of the chief of service and, in particular, the head of the department to spend a minimum of three fourths of his time in the dispensary and secondly to give a good three fourths of the eye surgery to attending men of middle rank on the staff. Too often he takes it all himself or gives it to the intern in unnecessary amount. If the competent and hard-working men in the middle rank of the staff are properly worked with and rewarded, they will do good work and make good records. If they are not given proper consideration, there will not be good work, good records or any other good activity in the dispensary. The condition is countrywide, worldwide. Every one knows the London, Paris, Vienna, Chicago, Boston clinics. It is certainly not peculiar to eye work. This paper makes the situation clear.

DR. JOHN GREEN, St. Louis: This study shows that about 6,000 patients had ocular conditions which might have been caused by syphilis. It is therefore rather startling to note that only 2,237, or 37.5 per cent, of these patients were investigated serologically and that positive reactions were obtained in only 444, or 19.9 per cent. The inference may be drawn that the clinicians did not think it worth while to have the Wassermann test made unless the clinical evidence pointed very strongly to

syphilis as the etiologic factor. The investigation disclosed many glaring defects which are probably common to clinical services throughout the country—incomplete and inccurate personal and family histories, meager information on lesions and treatment, and entirely inadequate social service and follow up. The authors quote Lewis and Holloway, who believe that from 50 to 75 per cent of syphilitic children develop serious diseases of the eye. This estimate is, in my opinion, quite accurate. From 1916 to 1919 I made a study of 100 syphilitic children from the pediatric clinic of the Washington University Dispensary and the wards of the St. Louis Children's Hospital. It is believed that these 100 cases fairly represent the types of hereditary syphilis seen in a pediatric service and that the number and kinds of ocular complications are what might be expected in such a group. The clinical diagnosis was confirmed in every case by at least a two plus blood Wassermann reaction. Seventy-four of these children presented definite pathologic conditions in one or more of the ocular tissues or some derangement of ocular function. As adequate treatment of syphilitic women will almost certainly result in the birth of healthy babies, the means are at hand to eradicate all syphilitic eye diseases in infants and children. By this one means alone the incidence of blindness due to syphilis would be reduced 50 per cent. To designate an eye disease as having a syphilitic origin in every case in which the serologic reaction is positive is a grave mistake, but it is equally reprehensible to neglect to have a blood Wassermann test made in certain cases in which the clinical manifestations do not certainly indicate syphilis. It is indeed amazing that in the ocular disease that almost invariably has a syphilitic basis, namely, interstitial keratitis, a positive Wassermann reaction should have been found in only 53.8 per cent. This percentage is so much at variance with ophthalmologic opinion that, with rare exceptions, interstitial keratitis occurring in children is of syphilitic origin that it must point to the neglect of the serologic test in too large a number of cases of this disease.

DR. LOUIS LEHRFELD, Philadephia: A survey on syphilitic optic atrophy has just been completed at the Wills Hospital, Philadelphia. A statistical investigation was made of 600 cases of syphilis affecting the optic nerve during a ten year period. The objective of the survey was to find out what happens to the eyesight of syphilitic patients who already show signs of involvement of the nervous system, and to ascertain how effective present methods of treatment might be. The most important conclusion of the survey is that the present day treatment of syphilitic patients having optic nerve involvement is entirely unsatisfactory so far as improvement of vision is concerned. The only appreciable difference among the treated and the nontreated patients with syphilis who have optic nerve degeneration is that the nontreated patients became blind in five years while the treated patients became blind in eight years. Of a group of 350 patients, 250 were white and 100 Negroes. The preponderance of syphilitic optic atrophy among the white patients compared with the Negroes, in whom syphilis is five times more prevalent, may be a basis for suspecting that present methods of treatment may precipitate early optic atrophy, while those who are lax in receiving treatment, particularly Negroes, are less likely to develop optic atrophy. There is no doubt in my mind that early treatment of syphilis affecting the ocular structures should be instituted to save sight. There is also no doubt in my mind that the present methods of using arsenicals must be revised if we wish to reduce the percentage of blindness from syphilitic optic atrophy. At the present moment the best method of preventing blindness from syphilis is to prevent the disease itself and not to place full reliance on the treatment of the disease.

MR. LEWIS H. CARRIS, New York: Though I can't discuss this paper from the scientific standpoint, on behalf of the National Society for the Prevention of Blindness, I am grateful to this organization for presenting this subject. Two things seem to me to be clearly shown: first, the need for improvement in the clinical service and, second, the importance of the social service follow-up work, in which we have been concerned. It is gratifying to note the progress being made in public health teaching with regard to the prevention and early treatment of syphilis. By getting at the heart of this problem, eventually there should be few cases that need the eye physician's help.

DR. CONRAD BERENS, New York: Dr. Brown's discussion, particularly his statement with regard to social service, is interesting. I feel that social service is exceedingly important and believe that more social service is needed. For example, in one institution in New York which has an eye and ear service one, two and at times three workers care for 60,000 new admissions a year. Therefore, little time can be devoted to the careful study of any particular group of eye patients. As a matter of fact this amount of social service work does not effectively and efficiently take care of our glaucoma patients alone. I agree with Dr. Brown that this paper is not a contribution to the study of syphilis except possibly as it relates to the prevention of blindness. Dr. Brown mentioned what I consider a vital point: the question of the importance of the clinic in the prevention of blindness. Those associated with the National Society for the Prevention of Blindness have long believed the clinic to be one of the most important factors in the prevention of blindness movement. I agree with Lehrfeld that we must not think so much of how to treat the disease, particularly disease of the optic nerve; but if we can only prevent the disease from developing we then can say that we are fulfilling our most important function as ophthalmologists. Dr. Green has raised another important point. He makes a point of having the cases studied by one particular physician in each clinic. We are coming more and more to the realization that if we hope to have efficient service in treating certain eye diseases, for example, glaucoma, syphilis and tuberculosis of the eye, we must develop certain physicians in our clinics who will more efficiently and scientifically care for these particular cases. Moreover, we must have adequate social service work in conjunction with this specialized medical work.

THE INCIDENCE OF OPERATIONS FOR GOITER IN SOUTHERN MICHIGAN

EFFECT OF IODIZED SALT AFTER TWELVE YEARS' GENERAL USE

ROY D. McCLURE, M.D.
DETROIT

There is no need to discuss here the now well known deleterious effect of a diet deficient in iodine. To Marine and his associates for their scientific discoveries, their stimulation of other workers and the dissemination of this newer knowledge is due all credit. Plummer, too, should be mentioned in any clinical talk on thyroid and iodine, as he scientifically demonstrated the early marked improvement, temporary though it may be, of patients with hyperthyroid disease from iodine administration.

Michigan lies in the center of the Great Lakes endemic goiter belt, one of the large, though not the most severe, endemic goiter areas. In these great areas both food and drinking water are known to be deficient in iodine. This deficiency in iodine is not observed uniformly throughout the so-called goiter belt. At Mount Clemens, Mich., 26 per cent of the children had enlarged thyroids, while at Romeo, Mich., 12 miles distant, 75 per cent of the children had enlarged thyroids. Both of these towns are within 30 miles of Detroit. The water supply at Mount Clemens was found to contain 25 parts of iodine per billion, while at Romeo the water supply contained not a trace of iodine in 50 liters. This variation in iodine content can undoubtedly be taken as an indication that iodine percentages must vary in water and foods throughout goiter areas as well as throughout the world, just as do other soluble salts commonly found in water and foods. One might surmise that the process of washing soluble

From the Department of Surgery, Henry Ford Hospital.
Read before the annual meeting of the American Association for the Study of Goiter, Detroit, June 16, 1937.

salts out of the earth's surface down into the ocean goes steadily on and that endemic goiter areas are probably increasing in size through the centuries, just as the farmer's soil is depleted of valuable elements by his crops unless they are regularly replaced by the proper fertilizers.

EXPERIENCE IN MICHIGAN

Almost thirteen years has passed since the introduction of salt containing iodine and it is now possible to check on the results of its use. Through cooperation of the Michigan State Medical Society, the state board of health, Dr. O. P. Kimball and the salt manufacturers, iodized salt was introduced in 1924 through the grocery stores without any legislation. Wide publicity of this effort was obtained at that time through letters from the state board of health to school children, parents and various organizations. In the clinic of the Henry Ford Hospital we had been treating, as had others, for a number of years previous to 1924, nontoxic diffuse goiter (simple colloid) in children with sodium iodide tablets with such uniformly good results and no ill effects that we believed in the probable efficacy of iodized salt distributed in this manner if it was universally adopted by the consuming public.

Iodized salt in Michigan contains 0.01 per cent of sodium iodide. The committee from the pediatric section of the state society, of which I am now a member, recommended that the use of this iodized salt alone should preclude the administration of any other form of iodine and that, to be effective, it should be used for cooking as well as for table use. The salt producers estimated that each inhabitant of Michigan on the average consumed between 5 and 6 pounds of salt a year, whereas other estimates placed the consumption at 8 pounds a year for each individual. The committee accepted the 8 pounds a year as a safe average. This would give the average consumer about 1 mg. of sodium iodide daily.

Letters received from the largest salt distributors in Michigan show that, from 1930 to 1935 inclusive, about 85 per cent of all the salt sold was iodized salt as compared to 15 per cent of plain free running salt.

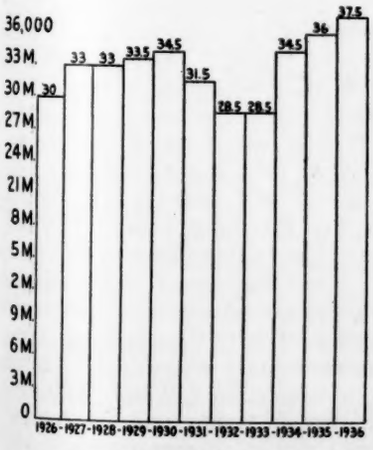

Chart 1.—Total operations in seven Michigan hospitals, 1926-1937.

For a few years after the publicity in this matter our patients knew when asked if they were or were not using iodized salt. Today without publicity the average citizen does not know, as a rule, whether he is or is not using iodized salt. The danger today is that without publicity a decreasing use of iodized salt may result. However, the largest salt distributors and grocery men have been our stanch allies in putting across this public health job without any law being enacted.

In Detroit today, owing mainly to the lack of publicity, a decreasing amount of iodized salt is being sold by some grocers. This is partly due to the slightly higher cost of iodized salt. With this decreased sale of iodized salt there is an increasing amount of enlarged thyroids among school children as well as in operating rooms.

In 1927 in our clinic there was a gradually increasing number of goiter patients coming to operation in spite of or perhaps because of the introduction of iodized salt. The large majority of the cases were of toxic nodular goiter and I [1] reported the results at that time. The rising curve of operations and the goiter death rate curve in Detroit suggested that the iodine might be harmful and that the earlier experience in Switzerland and in France which resulted in giving up the use of iodine was correct. However, the iodized salt sales were under such headway that there could be no discouraging its use.

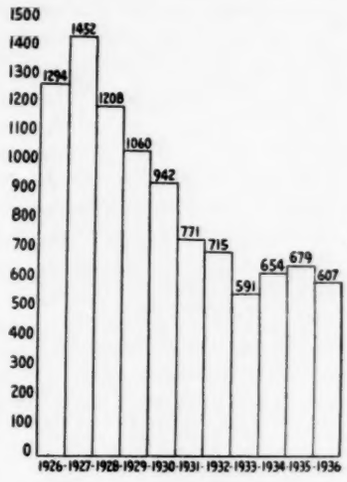

Chart 2.—Total thyroidectomies in the same seven hospitals, 1926-1937.

During the next few years the number of goiter operations in our clinic fell off so rapidly in spite of an increasing total number of all operations that I was led to ask the seven largest hospitals in southern Michigan for their statistics. These included University Hospital, Ann Arbor; Harper, Grace, Henry Ford and Receiving hospitals, Detroit, and Blodgett Memorial and Butterworth hospitals, Grand Rapids. Their figures have been during the years freely given to us and curves plotted of each of these and then a composite curve made.

This curve shows exactly the same results that we were having in our clinic. In the seven hospitals there were only 591 goiter operations in 1933 as compared to 1,452 such operations in 1927, while the total number of all operations during the depression years dropped, a 60 per cent drop in goiter surgery compared to 17 per cent drop in all surgical operations.

It has been suggested that the decrease in the amount of goiter might be due to the depression diets, but a study of our curves show that the decline in the number of goiters started four years before the depression peak and has remained down with the return of prosperity as the total number of all operations was rising.

The yearly death rate from goiter supplied to us through the courtesy of the Detroit Board of Health suggests too that there was some harmful effect the first few years after the introduction of iodized salt (chart 3). It should be noticed that the death rate is lower than before the introduction of iodized salt for the greatly increased (doubled) population of Detroit in the eighteen years shown.

In 1924, 35 per cent of all the Detroit school children showed enlargement of the thyroid gland.[2] In 1932 only about 1 per cent had any such enlargement. McClendon,[3] from the draft board statistics, has shown

1. McClure, R. D.: Experience with the Thyroid Problem in a Detroit Clinic, Ann. Surg. **85**: 333-338 (March) 1927.
2. Kimball, O. P.: The Prevention of Goiter in Detroit and Cleveland, J. A. M. A. **97**: 1877-1879 (Dec. 19) 1931.
3. McClendon, J. F., and Williams, Agnes: Simple Goiter as Result of Iodine Deficiency, J. A. M. A. **80**: 600-601 (March 3) 1923. McClendon, J. F., and Hathaway, J. C.: Inverse Relation Between Iodine in Food and Drink and Goiter, Simple and Exophthalmic, ibid. **82**: 1668-1672 (May 24) 1924.

that the incidence of exophthalmic goiter throughout the United States is proportional in every locality to the incidence of endemic goiter. These two statements have been borne out by the observations reported here. In this region since the introduction of iodized salt, coincident with the great dropping off in the number of enlarged thyroids, there has been a corresponding diminution in the number of thyroid operations for hyperplasia and adenomas of the thyroid gland.

The most striking chart presented here (chart 4) is that showing the incidence of goiter or enlarged thyroid glands in the children in Detroit schools. These examinations were conducted by Kimball and the Detroit Board of Health.

As shown in the charts, the first year after the introduction of iodized salt in Michigan the rising curve suggested a possible harmful effect, and if the iodized salt had been stopped at that time the latter striking drop in the curve would not have been observed. Kocher [4] in 1904 had warned against the indiscriminate use of iodine because of symptoms of hyperthyroidism in the adenomatous or nodular type of goiter. Kocher [5] in 1910 and 1911 in papers on jodbasedow told of the untoward effects of iodine in exophthalmic goiter. The very name, i. e., iodine hyperthyroidism, fixed in the minds of his followers the possible dangers of iodine in the treatment of goiter.

From Cleveland in 1926 Hartsock [6] reported that many persons with goiter are precipitated into a state of hyperthyroidism by the use of iodized salt, but he wrote to me in August 1933: "At the present time we doubt very much if we see any cases that are of this nature; i. e., iodine hyperthyroidism." [7] This Dr. Hartsock again confirms in 1937 by letter to me.

Cowie of Ann Arbor has been especially interested, as one of the responsible committee, in investigating several cases of hyperthyroidism supposed to have been induced by the use of iodized salt. He reports: "We have run down several reports of ill effects from the use of iodized salt, but in each instance we have found that the reports were fallacious."

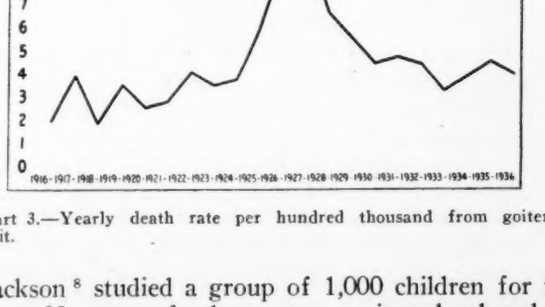

Chart 3.—Yearly death rate per hundred thousand from goiter at Detroit.

Jackson [8] studied a group of 1,000 children for ten years. No case of adenomatous goiter developed, if treatment was started before these conditions were present.

Can iodine hyperthyroidism be produced in an individual with a normal thyroid with enormous doses of iodine? We believe that this does not occur. We quote reports from two large divisions of syphilis where patients receive huge doses of iodine. Dr. J. E. Moore of the Division of Syphilis of the Department of Medicine at the Johns Hopkins Hospital reports to me that they have records of over 20,000 patients treated with large doses of iodides with no record of a patient developing iodine hyperthyroidism. Dr. Frank Menagh

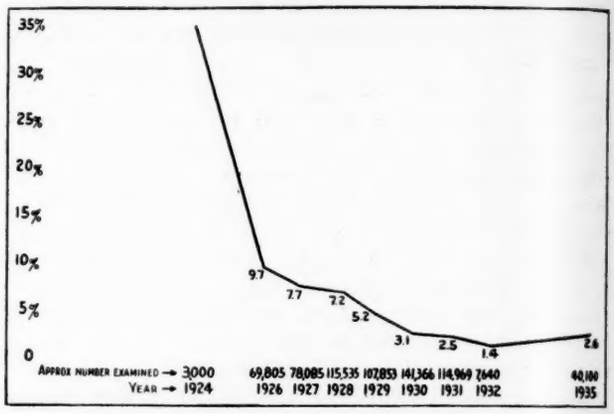

Chart 4.—Incidence of goiter in Detroit schools (Dr. O. P. Kimball).

of the Henry Ford Hospital reports to me that among 6,000 cases of syphilis treated with large doses of iodides there was only one patient who presented symptoms suggestive of iodine hyperthyroidism and this was very questionable. These patients in our syphilis clinic were, of course, living in an endemic goiter region, so many had mild simple goiter.

Marine and Kimball [9] reported: "The administration of any salt or iodine in any manner completely protects the remaining thyroid against compensatory hyperplasia."

COMMENT

In view of our striking results we are led to believe that perhaps some of the goiters that we are now seeing may be due to a disturbed iodine metabolism. It might seem that the patient was taking by mouth sufficient iodine to prevent the thyroid enlargement. However, in our area it may happen that the patient does not like salt with his food or may have a prejudice against iodized salt. Then, too, as in a goiter belt the iodine content of the water varies as it does in nongoitrous areas, in a small locality the more closely confined persons in that area may have a diet deficient in iodine.

In 1928 Marine [10] reported: "As a result of the numerous studies of the relation of iodine to the thyroid gland our present views regarding the cause of goiter assume that it is a compensatory hypertrophy of the thyroid depending on a relative or absolute deficiency of iodine. This deficiency of iodine may be due to: (1) factors which bring about an abnormally low intake of iodine; (2) factors which interfere with the absorption or utilization of an otherwise adequate intake; (3) factors which increase the needs of the body for the iodine containing hormone." The chief factor under 1 is the lack of iodine in the food and water supply. Factors under 2 are not so well known, although there have been recent papers on this subject.

4. Kocher, Theodor: Die Therapie des Kropfes, Deutsche Klinik **8**: 1115-1184, 1904.
5. Kocher, Theodor: Ueber Jodbasedow, Arch. f. klin. Chir. **92**: 1166-1193, 1910.
6. Hartsock, C. L.: Iodized Salt in Prevention of Goiter: Is It Safe Measure for General Use? J. A. M. A. **86**: 1334-1338 (May 1) 1926.
7. McClure, R. D.: Thyroid Surgery in Southern Michigan as Affected by the Generalized Use of Iodized Salt, J. Michigan M. Soc. **33**: 58-62 (Feb.) 1934.
8. Jackson, A. S.: Etiology, Diagnosis and Treatment of Goiter, J. Missouri M. A. **30**: 389-393 (Oct.) 1933.
9. Marine, David, and Kimball, O. P.: Prevention of Simple Goiter in Man, J. A. M. A. **77**: 1068 (Oct. 1) 1921.
10. Marine, David: Chemistry in Medicine, New York Chemical Foundation, Inc., 1928, p. 272.

Under 3 it is well known that the thyroid is prone to enlarge at puberty, at menstruation, during pregnancies and sometimes in cases of malnutrition and with infections.

It would appear that iodine metabolism is very closely related to the problem of thyroid dysfunction.[11]

CONCLUSIONS

1. There is no doubt that there is a deficiency of iodine in the diet of the inhabitants of Michigan. To combat this it is safe and sound in some way to add more than enough iodine to the diet. In Michigan iodized salt has been chosen at the present time as the most practical way.

2. Iodized salt as used in Michigan did at first apparently increase the number of thyroid operations.

3. The increase occurred in the nodular goiter or adenoma group, and we believe the iodized salt may have activated a group of patients with quiescent adenomas, producing toxic goiter symptoms.

4. The increase reached its peak in the second year after the introduction of iodized salt.

5. An increase in the death rate from goiter as shown by the board of health statistics reached its peak in the second year after the introduction of iodized salt.

6. There was no increase in hyperthyroidism excepting in the nodular goiter or adenoma group.

7. The number of operations for toxic diffuse and toxic nodular goiter has rapidly and steadily decreased after the apex of the second year excepting for a slight increase during the last three years.

8. The incidence of endemic goiter or enlarged thyroid has been reduced almost to nil since iodized salt has been so widely used.

9. We now see no cases which show the slightest ill effects from the use of iodized salt.

10. Toxic nodular goiter and toxic diffuse goiter are less apt to occur when there has been no previous enlargement of the thyroid (endemic goiter); at least this would seem a safe conclusion based on our experience.

11. As the publicity concerning the necessity for the use of iodized salt has fallen off, the sales of iodized salt have decreased until today one of the larger retail dealers in Detroit sells only about 50 per cent of iodized salt. Others range in sales up to 75 per cent, while the average is 75 per cent.[12] Our charts, reproduced here, show the result of this delinquency by a slight rise in the number of goiters in our school children and in our operating rooms. To combat this slump, either continued publicity must be given to this subject or should a law be passed making it mandatory for grocers to sell only iodized salt?

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12. June 15, 1937, large grocery stores of Detroit report their percentage of iodized salt sales in 1937 as follows: G. I. MacMillan, 75; Lee & Cady, 70; Edward Wallace & Son, 50; Neff Bros., 80; Hamilton Grocery Market, 85.

Booked for a Fall.—Some doctors have the conception that a medical library is a place where some one can be found who will prepare a list of references with which to embellish their compositions. Some organizations even advertise that they will, for proper remuneration, look up the literature of a given subject so that writing may be made easy. Writing is not easy and cannot be made so by any known short cuts, and who ventures on such, even has he natural gifts of expression, is booked for a fall.—Cushing, Harvey: Consecratio Medici and Other Papers, Boston, Little, Brown & Co., 1928.

Clinical Notes, Suggestions and New Instruments

CHRONIC ARACHNOIDITIS OBLITERATING THE SPINAL SUBARACHNOID SPACE

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Though the choriomeningitis of human beings that is due to the virus of Rivers and Scott is usually a relatively mild malady ending in complete recovery—so mild indeed that it is often designated "acute benign lymphocytic meningitis"—the case to be reported here indicates that it may sometimes be followed by a severe chronic arachnoiditis which causes widespread obliteration of the spinal subarachnoid space.

Florence A., a white woman now 37 years of age, suffered from an attack of lymphocytic meningitis in February 1936.

Aside from a trauma of the head some thirteen years earlier from which she had made a good recovery, her previous history had been uneventful.

About two weeks before her admission to the Johns Hopkins Hospital in February 1936 she lost her appetite and complained of sore throat, general sensitiveness, aching pains and fever (temperature of 103 F.). She became irrational, had a convulsive seizure and, since she was pregnant, was admitted to the obstetric service, where on lumbar puncture it was found that the cerebrospinal fluid contained 500 white cells, 90 per cent of which were lymphocytes. She was transferred to the Osler Medical Ward (service of Dr. W. T. Longcope) for further study and treatment. She continued to have slight fever; an abortion occurred, and bilateral parotitis developed. For a time there was doubt as to whether she was suffering from a "mumps encephalomeningitis" or from "benign lymphocytic meningitis associated with parotitis." Some of the spinal fluid was sent to the Rockefeller Institute and in it the virus of lymphocytic meningitis (Rivers and Scott) was shown to be present. Cultures from Steno's ducts showed that the parotitis was due to Staphylococcus aureus.

When convalescence set in she seemed to do well at first, but later there was nausea, vomiting, difficulty in urination and a convulsive seizure. During the early part of the summer she gradually lost motor power in the lower half of the body and sensory disturbances developed (all modalities) from the level of the fourth thoracic segment downward. Repeated lumbar punctures were attempted but no cerebrospinal fluid could be obtained, nor did any fluid flow out when cisternal puncture was done. It was possible, however, to inject some iodized poppy-seed oil into the cisterna and on x-ray examination it was shown that this iodized oil did not trickle farther downward than the level of the fifth thoracic segment, where it underwent complete block.

In July Dr. Walter Dandy explored the lower thoracic cord, removing the posterior portions of the fourth, fifth, sixth and seventh thoracic vertebrae. Below the dura was a thick fibrous mass attached to the spinal cord upward and downward throughout the whole area explored, completely obliterating the subarachnoid space in the region examined.

After recovery from this operation she walked with the aid of crutches for a time, but in November she suffered from an attack of influenza, after which she found herself totally unable to move the lower extremities; she suffered from dysuria and continued to be numb from the waist downward.

At the present time (the early part of March 1937), the patient exhibits complete spastic paralysis from the level of the umbilicus downward with patellar and ankle clonus. The abdominal reflexes are absent. The bladder remains partially distended after urination. Sensory disturbances below the level of the fourth thoracic segment are marked; pain, temperature and vibratory sensations are absent; tactile stimuli yield no response between the levels of the fourth thoracic and the first lumbar, and response is only slight from the first lumbar downward.

It would seem obvious that the clinical picture must be due to the severe chronic arachnoiditis with involvement of the spinal cord and posterior roots demonstrated by Dr. Dandy at his exploratory operation, and it would seem most probable that this chronic arachnoiditis has been a direct sequel of the

acute lymphocytic meningitis of February 1936, which was proved to be due to the minute ultramicroscopic virus of Rivers and Scott. No case precisely like this appears as yet to have been recorded in the literature of lymphocytic meningitis, though cases of circumscribed chronic leptomeningitis causing pseudocerebral tumors were reported last year by de Martel, Guillaume and Thurel.[1]

The surgical aspects of chronic arachnoiditis have been discussed by Stookey,[2] and the ameliorative effects of treatment by high voltage roentgen therapy have been reported by Selinsky.[3]

1035 North Calvert Street.

Special Clinical Article

DISTURBANCE OF THE CARDIOVASCULAR SYSTEM IN NUTRITIONAL DEFICIENCY

CLINICAL LECTURE AT ATLANTIC CITY SESSION

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AND
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In the study of the etiology of cardiovascular dysfunctions in general and of heart disease in particular, attention has been focused mainly on infectious and degenerative processes and on congenital malformations. Since cardiovascular disease is the most important cause of death, and since in life the body comes in closest contact with environment through nourishment, the interrelation between the cardiovascular system and nutrition is a problem of primary importance. It is our purpose in this communication to describe nutritional factors that are responsible for abnormal function of the cardiovascular system. McCarrison [1] sums up the nutritional origin of disease as follows: ". . . faulty food, faulty nutrition, faulty function, faulty structure, faulty health, disease." In certain nutritional states such a sequence of changes results in disease of the heart and of the blood vessels. Our present knowledge of these matters is meager, but the available clinical observations and experimental data suggest the probable significance of the field as yet unexplored.

Both deficiencies and excesses of food can lead to disturbance of the circulation. In some instances a deficiency of a substance may become pathogenic, so far as the cardiovascular system is concerned, only when combined with an excess of another food substance. Thus the clinical manifestations of certain vitamin deficiencies are conditioned not only by the total caloric intake and the total amount of energy expended but also by the proportional intake of carbohydrate, protein and fat. Evidence is available which suggests that disturbance of the intermediary metabolism, such as occurs in diabetes, can also enhance the manifestations due to unbalanced diet. Rigid separation of the morbid effects of nutritional excesses and deficiencies is therefore not always possible, as the coexistence of the two factors may be responsible for disease.

Among the nutritional excesses, increased intake of calories, as manifested by obesity, frequently exerts harmful effects on the heart and particularly on the circulation. Pronounced corpulence should be looked on, therefore, as a debilitating condition of great significance. There is no substantial experimental or clinical evidence, on the other hand, indicating that a diet disproportionately rich in vegetable or animal protein causes cardiac or vascular disease.[2] It has been amply demonstrated that feeding of cholesterol to certain species of animals can induce atherosclerosis or, rather, "cholesterinsteatosis," and through it heart disease.[3] The significance of the cholesterol content of the diet in the causation of human arteriosclerosis, on the other hand, is not established.[4] In diabetes a high fat diet is apparently particularly apt to cause arteriosclerosis.[5] Excesses of water and of mineral constituents play no appreciable rôle in circulatory disturbances except through indiscriminate use in postoperative states and in patients with heart disease.

At present there is no conclusive evidence that hypervitaminosis plays a rôle in the causation of functional or structural changes in the human cardiovascular system. The arteriosclerosis induced in animals with large doses of vitamin D has nothing in common with human arteriosclerosis. The rare instances of cardiac damage attributed to vitamin D [6] cannot be accepted as due to hypervitaminosis. It is of interest that in a case in which there was evidence of hypervitaminosis D no cardiovascular lesions were noted.[7]

NUTRITIONAL DEFICIENCIES

Caloric Intake (Undernutrition and Inanition).—Fasting or severe restriction of diet results in a bradycardia of from 30 to 40 per minute, a decrease of the arterial pressure and a lowering of the metabolic rate.[8] The degree of lowered metabolism in chronic undernutrition may be out of proportion to the loss of body weight.[9] Since the blood flow is related to the level of the oxygen consumption, undernutrition is presumably associated also with decreased blood flow and cardiac work. These circulatory changes, if maintained for a short period, may exert a beneficial effect in congestive circulatory failure caused by organic heart disease.[10] Prolonged undernutrition, on the other hand,

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2. Stookey, Byron: Adhesive Spinal Arachnoiditis Simulating Spinal Cord Tumor, Arch. Neurol. & Psychiat. **17:** 151 (Feb.) 1927.
3. Selinsky, Herman: Disseminated Spinal Arachnoiditis, Arch. Neurol. & Psychiat. **35:** 1262-1279 (June) 1936.
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2. Freyberg, R. H.: Relation of Experimental Atherosclerosis to Diets Rich in Vegetable Protein, Arch. Int. Med. **59:** 660 (April) 1937. Weiss and Minot.[4]
3. Anitschkow, N.: Experimental Arteriosclerosis in Animals, in Arteriosclerosis: A Survey of the Problem, edited by E. V. Cowdry, New York, Macmillan Company, 1933, chapter 10, p. 271. Leary, Timothy: Experimental Atherosclerosis in the Rabbit Compared with Human (Coronary) Atherosclerosis, Arch. Path. **17:** 453 (April) 1934.
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9. Boenheim, F.: A Contribution to the Pathology of Malnutrition: I, Acta med. Scandinav. **84:** 115, 1934.
10. Proger, S. H., and Magendantz, Heinz: Effect of Prolonged Dietary Restriction on Patients with Cardiac Failure, Arch. Int. Med. **58:** 703 (Oct.) 1936.

causes unfavorable cardiac changes. Thus general wasting of the skeletal muscles is associated with similar changes in the myocardium,[11] and also with intracellular deposition of fat (fatty degeneration) and with decrease of interstitial fat. The extensive data available in the literature indicate that in adult animals and man chronic malnutrition results in considerable loss, from 20 to 50 per cent, in cardiac weight, while in malnourished young animals or children the loss is slight. In general the degree of loss in heart weight is somewhat less than that in total body weight.[11] The heart of animals and men dying as a result of chronic starvation may show reduction in the size of the myocardial fibers with changes in the cross striation and a deposition of iron-free pigment granules (brown induration). So far as is known there are no experimental or clinical studies on the response of such hearts to various types of strains. One of us has had the opportunity, however, to observe that malnourished dogs and cats brought to the laboratory are apt to respond with unexpected cardiac standstill to operative procedures and drugs, both of which are well tolerated by animals that have previously received a balanced diet.

Malnourished patients, as observed during famines, are considered poor surgical risks. The association of famines with epidemics of infectious diseases suggests lowered resistance of these patients, especially to infections. Evidence is lacking, however, to indicate that chronic undernutrition is responsible for vascular disease, including arteriosclerosis. Prolonged famines and chronic wasting diseases are not known to be associated with increased incidence of cardiovascular disease.

Protcins.—The rôle of proteins in the maintenance of the osmotic pressure of the circulating blood is well established. Chronic protein deficiency leads to edema, which may be generalized ("nutritional edema") and which exerts a harmful effect on the circulation, particularly when it involves the lungs. In the presence of low serum proteins there is loss of fluids into the tissues and a tendency to circulatory collapse. In patients with organic heart disease, a low protein content of the blood associated with high venous and hence high capillary pressure can accentuate or precipitate pleural and peritoneal transudation and can increase the tendency to cardiac asthma and pulmonary edema.[12] In conditions associated with continuous protein loss, such as occurs in pleural or peritoneal exudates or transudates requiring repeated taps, particular effort should be made to reestablish the normal protein content of the blood by means of adequate protein in the diet.

Carbohydrates.—Reduction of the blood sugar below a certain level can result in syncope, circulatory collapse and convulsions associated with a striking fall in the arterial pressure.[13] Such states occur as a result of hyperinsulinism, caused either by overdosage or by abnormal production, as is the case in certain hyperplasias and tumors of the islands of Langerhans and other glands of internal secretion. A similar type of circulatory collapse can occur also in diabetic patients with a normal or even elevated blood sugar if it has been lowered too abruptly from an unusually high level. In hypoglycemic shock administration of dextrose promptly reestablishes normal circulation.

Water and Salts.—While the human body possesses adequate mechanisms for the maintenance of a homeostatic state against increased intake of water and salt, its protective mechanisms against loss of water or salt are poor. Hence dehydration and salt depletion occur relatively frequently, and they represent grave danger to the organism mainly through circulatory collapse and shock. Whether, in addition, water restriction can reduce the cardiac weight, and thereby produce circulatory failure, is not definitely established, although there are reports indicating that animals dying from thirst can lose from 30 to 40 per cent or more of their cardiac weight.[11] The high infant mortality from diarrheal states and the decimating effects of cholera and other dehydrating infectious diseases on certain sections of the human race demonstrate the practical significance of circulatory collapse and shock of dehydration origin.[14] It has been estimated that normally between 7,500 and 10,000 cc. of fluid is secreted into the intestinal canal within twenty-four hours. Whereas in health the greater part of this fluid is reabsorbed, in certain pathologic conditions, particularly those associated with vomiting and diarrhea, most of it, together with its organic and inorganic constituents, may be lost. Unless corrected or counteracted by adequate supply, such a fluid and salt loss rapidly leads to a reduction of blood volume with hemoconcentration and with accumulation of toxic waste products, and, finally, to fatal collapse and shock. In diseases associated with fever, fistulous opening, as in biliary and pleural fistulas, heat exhaustion, adrenal insufficiency, or vomiting with pyloric stenosis, the adequate replacement and supply of water and salts are most effective measures in the prevention of peripheral failure of the circulation. Collapse and shock of dehydration and of "hypochloremia" may also result from the indiscriminate use of gastric or duodenal drainage with suction ("Wangensteen tube"), such as is in vogue at present in certain surgical and medical conditions, which often are already associated with a tendency to collapse and shock. We have observed instances of abdominal distention and postoperative conditions in which constant gastric suction produced the typical syndrome of dehydration and "hypochloremic" shock. The relative rôle of low blood chlorides in the circulatory collapse associated with vomiting and alkalosis is not clearly understood as yet. The treatment of patients with collapse caused by water and salt deficiency has been described elsewhere.[15]

Iron and Certain Other Nutritional "Extrinsic" Factors.—Deficiency of iron and of certain protein derivatives essential for normal blood formation produces, through hypochromic or macrocytic anemia, changes in the circulation. These changes are characterized mainly by an increase in the velocity of blood flow and in the cardiac output, by a fall in the arterial pressure[16] and frequently by an increase in pulse pressure. In one group of patients enlargement of the heart occurs, and at necropsy cardiac dilatation and hypertrophy may be found. While by x-ray examination the cardiac

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15. Weiss, Soma, and Wilkins, R. W.: Syncope, Collapse and Shock: Their Medical Significance and Their Treatment, M. Clin. North America **21**: 481 (March) 1937. Atchley.[14]

16. Stewart, H. J.; Crane, N. F., and Deitrick, J. E.: Studies of the Circulation in Pernicious Anemia, J. Clin. Investigation **16**: 431 (May) 1937. Grünberg.[17]

shadow is increased in but 8 or 9 per cent of the cases presenting a hemoglobin content of from 56 to 65 per cent, it is increased in all cases in which a hemoglobin level of from 12 to 15 per cent is reached.[17] The initial enlargement is to the left, and later to the right. In pernicious anemia fatty degeneration of the myocardium, accentuated around the venous ends of the capillaries, can result in the "tiger lily" appearance of the cut section. Since the introduction of liver therapy, however, such changes have become rare. The cause of cardiac enlargement in some instances of anemia remains obscure, since it cannot always be related, in our experience, either to increased work of the heart or to the degree of anemia. In only one group of anemic patients with cardiac enlargement does the size of the heart return to normal with the return of the hemoglobin to a normal level. In the remainder this enlargement is possibly caused or influenced by simultaneous deficiency of factors other than hemoglobin.

In anemia systolic murmurs over the apex and base of the heart are frequent as a result of dilatation of the heart. Rarely, in severe anemias, transient diastolic murmurs occur. With improvement they disappear long before the subsidence of systolic murmurs. Patients with severe anemia often suffer from palpitation, brought on mainly by emotions and exertion. There may also be a tendency to syncope. Rarely anemia may precipitate congestive failure, as well as angina pectoris, even without coronary disease. Finally, angina has been observed in cases of pernicious anemia during treatment, presumably the result of a sudden increase of cardiac work without simultaneous increase of cardiac strength.

Vitamins.—In spite of recent advances in the chemistry and physiology of the vitamins, the rôle of these substances in human disease is relatively little understood. There are several reasons for the slower progress in the clinical than in the experimental field. The most significant one is that man seldom chooses his diet so that it is deficient in only one factor. The possible modifying influences of simultaneous deficiencies on the human body prevent analysis of the effects of a single deficiency under controlled conditions. Among the vitamins, deficiencies of the B complex and of vitamins C and D have been claimed to cause disturbances in the cardiovascular system.

Vitamin B Complex.—Deficiency of these vitamins is related, at present, mainly to two diseases: vitamin B_1 to beriberi and B_2 to pellagra. In the United States the two diseases frequently occur in the same patient in a combined form.

Beriberi.—Of all the vitamins, B_1 is the most important in relation to the heart. Beriberi has been known for centuries as a devastating disease of the rice-eating peoples of the Orient. Subsequently it was found that it occurs in as widely separated areas as South America, Africa, Labrador and the United States. In the Orient the disease has been known in its "dry" and its "wet" form. The dry form manifests itself mainly in muscle wasting and peripheral neuritis. The wet form is associated with cardiovascular disturbances and generalized edema. Although the severe dry form of beriberi usually is not associated with serious cardiovascular disturbances, moderately severe cardiovascular dysfunction may be present, and, contrariwise, moderately severe neurologic manifestations may occur in cases of severe wet beriberi. Strenuous exertion is a dangerous aggravating factor in beriberi, and severe neuritis, by making work impossible, may protect against serious or fatal circulatory failure. From the point of view of the clinical course, mild and severe forms and acute, subacute and chronic types have been differentiated. In the acute "pernicious" type, death of cardiac origin can come with unexpected rapidity. The cardiovascular disturbances in beriberi of the Orient have been described and summarized by Shimazono[18] and Wenckebach.[19] The main cardiovascular manifestations are dilated heart, embryocardia, tachycardia, arterial sounds ("pistol shots"), warm skin, edema, dyspnea and circulatory collapse.

Psychic, gastro-intestinal, metabolic, hemic and bony disturbances are often present in beriberi patients, and it is not definitely known just what rôle deficiency of one or another substance may play in the production of these symptoms. In patients with beriberi the clinical picture is the result primarily of deficiency of vitamin B_1, but deficiency of other substances is contributory, and this should be considered in treatment.

Beriberi in the United States.—The first step in the discovery of beriberi as a disease of regular occurrence in the United States was the recognition that certain types of neuritis are related to nutritional disturbances and particularly to lack of vitamin B_1.[20] These contributions have, in turn, raised the obvious problem that if certain types of polyneuritis are caused by deficiency of vitamin B, some of the patients should present manifestations related to the cardiovascular system, such as are observed in beriberi patients of the Orient. Our investigation then revealed that patients with nutritional and particularly with vitamin B deficiency show not only disturbances in the nervous system but also in the cardiovascular system similar to those described in the Orient.[21] This finding lent support to the nutritional origin of alcoholic polyneuritis and of the polyneuritis of diabetes and of pregnancy.

Sporadic instances of "beriberi heart" in the United States, both in adults and in infants, have been reported before.[22] A systematic study, however, revealed that beriberi with cardiovascular as well as with neurologic manifestations is of regular occurrence in the United States. One hundred and twenty such cases presenting cardiovascular manifestations were observed in the Boston City Hospital.[21b] Thirty-five cases of this group, on which special investigations were conducted, occurred out of 5,506 medical admissions. The condition occurs, at least in a certain section of the population, more frequently than congenital heart disease or subacute bacterial endocarditis. Beriberi, however, is a far more

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21. (*a*) Weiss, Soma, and Wilkins, R. W.: The Nature of the Cardiovascular Disturbances in Vitamin Deficiency States, Tr. A. Am. Physicians **51:** 341, 1936. (*b*) The Nature of the Cardiovascular Disturbances in Nutritional Deficiency States (Beriberi), Ann. Int. Med., July 1937.

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common disease than is indicated by the frequency of the cardiovascular manifestations, as in the majority of instances it manifests itself in neurologic disturbances only. Most of the patients observed regularly drank large amounts of alcohol. In a smaller group drug addiction, pregnancy, diabetes, gastro-intestinal disease, psychic peculiarities (food fads) and poverty played a rôle. The patients were usually well nourished, with caloric intake adequate or more than adequate, but with an estimated vitamin B (B_1) intake less than that indicated by Cowgill as liable to produce polyneuritis. Many of the patients also had symptoms of pellagra and a few had scurvy.

The most common cardiovascular symptoms of beriberi, in our experience, are dyspnea on exertion associated with palpitation, tachycardia and embryocardia. During improvement the tachycardia may change to bradycardia. Gallop rhythm, prominent cardiac and epigastric pulsations and bounding peripheral pulses with sounds ("pistol shots") are also frequently present. The heart may be normal in size or enlarged, and systolic and rarely diastolic murmurs may be heard. In the severe cases the dyspnea is intense and can appear with unexpected severity. Cardiac asthma (paroxysmal dyspnea) has also been observed. Signs of pulmonary congestion are frequently present, and cloudiness of the lung fields is seen on roentgenologic examination. The arterial pressure is usually normal, with a tendency to increased pulse pressure. In some cases the systolic pressure is moderately elevated during the acute stage of circulatory failure, but it returns to normal when the patient's condition improves. The veins of the neck are normal or engorged, as is confirmed by the normal or elevated venous pressures. The skin is usually warm and of normal color; at times it is cyanotic. Edema is frequently present, either diffuse or dependent, and it may be of extreme degree. The patients with severe cardiovascular manifestations are prone to develop fever and this, in turn, aggravates failure of the circulation.

Patients incapable of exertion because of severe polyneuritis, like those described in the Orient, are less liable to have advanced circulatory failure. Contrariwise, those with mild cardiovascular symptoms may be made to have pronounced symptoms by moderate exercise.[21a]

In five of our cases a hyperactive carotid sinus reflex was responsible for syncope. Following the administration of a diet rich in vitamin B (B_1) the hyperactive state of the carotid sinus reflex subsided and subsequently the stimulation of the sinus produced no symptoms. Sudden circulatory collapse without premonitory symptoms occurred in a few patients. Electrocardiograms taken in sixty-seven cases presenting normal blood pressures and no clinical evidence of organic heart disease disclosed abnormalities in all but five cases. The most common observation was alteration in the T waves. The hemodynamics were characterized by low vital capacity of the lungs, high venous pressure and normal arterial pressure, and by a relatively or absolutely increased velocity of blood flow with decreased peripheral utilization of arterial oxygen. The osmotic pressure of the blood usually was moderately low. There was often an increase in the bisulfite binding substances in the blood.[23]

Postmortem examination in the majority of instances revealed that the weight of the heart was normal and that there was a moderate dilatation of the right ventricle. In only nine out of thirty cases was there an increase in weight and a considerable degree of dilatation of the cardiac chambers, particularly the right ventricle. The dilatation of the right ventricle was not so marked or so frequent in the group observed in Boston as in the cases studied by Wenckebach in Java. In various species of animals in which nutritional polyneuritis has been induced, decreased, normal and increased cardiac size and weight have been reported.[11]

The histologic changes, hydropic degeneration of the myocardial fibers, swollen collagen, perivascular "edema" and separation of the myocardial bundles were identical with those described by Wenckebach. The histologic changes, however, are not regular, nor specific to or even characteristic of beriberi. The water content of the left and right ventricles was the same in cases of beriberi as in normal persons or in patients with organic heart disease.[21a] This suggests that the accumulated intercellular substances contain a normal amount of solids.

The symptomatology and the studies of the hemodynamics indicate that the type of cardiovascular disturbances of beriberi as observed in Boston does not form a rigid clinical syndrome. Right ventricular failure, left ventricular failure, peripherial arteriolar dilatation and increased blood flow, peripheral circulatory collapse and shock, singly or in combination, have been observed. Beriberi causes marked changes not only in the heart but also in the vascular system; hence the term "beriberi heart" is inadequate for the designation of the cardiovascular dysfunctions in this disease.

The diagnosis of beriberi cardiovascular disease is facilitated by the frequent simultaneous presence of certain noncirculatory manifestations of dietary deficiency, such as peripheral neuritis, psychosis, glossitis, diarrhea, dermatitis, anemia, hypoproteinemia, dysphagia, hoarseness, dry and irritating cough, aphonia and purpura. In the differential diagnosis the absence of recognized etiologic causes of organic heart disease and the history of an abnormal diet or intestinal dysfunction may be helpful. The combined presence of congestive failure of the circulation and a relatively or absolutely increased rate of the circulation is the most outstanding characteristic of the condition. The assured diagnosis may depend on the complete recovery of the patient after rest and vitamin B therapy.

The fact that beriberi is a disease of regular occurrence among adults in the United States now raises the question of the occurrence of this disease in infants and children. Lehndorff and Mautner [24] have discussed the problem of whether the cardiac hypertrophy and dilatation sometimes observed in children is a manifestation of avitaminosis. Haas [25] reported the occurrence of beriberi in infants who suffered from celiac disease. Abt [26] has recently reviewed this subject.

It is of interest that the infantile type of beriberi in Japan [27] and the Philippines [28] occurs mainly among

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24. Lehndorff, H., and Mautner, H.: Die Coeliakie, Ergebn. d. inn. Med. u. Kinderh. **31**: 456, 1927.

25. Haas, S. V.: Beriberi in Late Infancy; The Result of Celiac Disease, Arch. Pediat. **46**: 467 (Aug.) 1929.

26. Abt, I. A.: The Child's Heart in Avitaminosis, Am. J. Dis. Child. **50**: 455 (Aug.) 1935.

27. Ohta, K.: Zur Klinik der Säuglings-Beriberi, Jahrb. f. Kinderh. **128**: 1 (June) 1930.

28. Albert, J.: Ueber die kardiale Beriberi im Säuglingsalter, Monatschr. f. Kinderh. **54**: 80, 1932.

breast fed rather than among artificially fed babies. This suggests that beriberi and avitaminosis of the mother can have an important bearing on the nutritional state not only of the new-born but also of the nursing infant. Whether some instances of "idiopathic" cardiac hypertrophy will be explained on this basis is not known at present. This problem has not been investigated in the United States.

The response of the cardiovascular system in beriberi to treatment is not uniform. Some patients show improvement on a deficient diet when simply put to bed; others may show sudden aggravation of the symptoms or even fatal collapse when kept in bed and on a deficient or even a normal diet. From the experience so far acquired, one gains the impression that some of the patients are benefited by digitalis and diuretics. The effect of diets rich in vitamins and particularly B (B_1), of extracts rich in B_1 and of crystalline B_1 is beneficial, but the rate of improvement of different aspects of the circulation, as measured by changes in the velocity of blood flow, oxygen utilization, vital capacity of the lungs, venous pressure, edema, cardiac size and electrocardiographic complexes varies considerably. Some patients improve rapidly, and the clinical course may show a dramatic change within a week with a loss of 30 or 40 pounds (13.6 or 18 Kg.) of edema fluid. In others the improvement is slower, and recovery may take from four to six weeks. In this respect, too, these patients behave like those with beriberi in the Orient and in Labrador. In general, improvement is most rapid in patients with a severe degree of congestive failure of relatively short duration. The histologic changes in the heart indicate that prolonged dietary deficiency may lead to structural changes, and under such conditions recovery may be slow.

Following the intravenous administration of from 5 to 10 mg. of crystalline vitamin B_1 three or four times daily to patients kept during a control period on a deficient diet, the first change observed was the increased peripheral utilization of oxygen and slowing of the blood flow as a result of disappearance of the arteriolar dilatation. This occurred as early as twenty-four hours following the administration of the first dose of vitamin B_1. Simultaneously there was symptomatic improvement and often marked diuresis. Following this there was a slow but steady rise in the vital capacity of the lungs and a decrease in cardiac size. The cardiovascular abnormalities last to disappear were those revealed by the electrocardiogram. This is in contrast to the situation in animals deficient in vitamin B_1, in which the changes in the heart rate and in the electrocardiographic complexes may be abolished as early as within four to six hours after subcutaneous administration of 5 micrograms of crystalline B_1.[29] In some patients a temporary elevation of the arterial pressure of several days' duration followed the first course of treatment with crystalline B_1, but this change could not be repeated by a similar course when the patients were not deficient in vitamin B_1. Administration of parenteral doses as large as from 30 to 100 mg. daily for from five to eight days, followed by oral administration of large amounts of B_1 extracts, failed to induce any detectable changes in the cardiovascular function of normal subjects or of nondeficient patients with organic heart disease or with various types of edema.

Comparative observations indicate that there is no rigid parallelism between the rate of improvement in the circulatory functions and in the nervous functions. The improvement was usually more striking, rapid and complete in the cardiovascular than in the neurologic disturbances. The only exception to this was the occasional remarkably rapid disappearance of psychosis after the administration of large amounts of vitamin B_1. Because of the frequent presence of multiple deficiencies in beriberi, attention should be paid in the treatment to the correction also of the anemia with iron and liver extract, of the hypoproteinemia with a high protein diet and of the hemorrhagic tendency with cevitamic acid.

The Rôle of Alcohol.—The following evidence indicates that alcohol per se is not the primary factor responsible for changes described: 1. Chronic alcoholism is an exceedingly common condition, in comparison with which beriberi is relatively rare. 2. Pharmacologic studies do not indicate that alcohol per se causes polyneuritis or cardiovascular disease. 3. Symptoms of dietary deficiency may appear long after the consumption of alcohol, particularly if prolonged gastrointestinal disturbances follow the alcoholic debauch. 4. It is known that patients with alcoholism are predisposed also to pellagra, and that they frequently have low cevitamic acid content of the blood.[30] It is improbable that a substance through "toxic action" should produce manifestations similar to those known to be caused by vitamins B_1, B_2 and C. 5. Finally, polyneuritis, pellagroid lesions and cardiovascular dysfunctions disappear on continuous alcohol intake provided vitamin B is administered simultaneously.[31]

On the other hand, we attribute to alcohol a secondary predisposing rôle in the precipitation of beriberi. Alcohol is a food substance *par excellence* in its capacity to supply the body with necessary calories but with a minimum of vitamin B. This is an ideal combination for beriberi, as high caloric and low vitamin B_1 intake, rather than general inanition, precipitates the clinical vitamin deficiency. The gastro-intestinal changes often present in chronic alcoholism[32] may well interfere with the absorption or utilization of the available vitamin B_1, while alcohol itself, a freely diffusible substance, is absorbed readily. There is also a possibility that a high intake of alcohol plays an additional predisposing rôle, similar to that of a diet rich in carbohydrate, as is common among the rice eaters. It is known that if B_1 avitaminotic animals are kept on a diet that is rich in fatty acids instead of carbohydrates, the manifestations of B_1 deficiency may be prevented.[33]

The origin of the "beer heart" cannot be explained on the basis of increased intake of alcoholic fluids. This condition was described before the use of the sphygmomanometer and it has "disappeared" since the recognition of the clinical significance of arterial hypertension; hence it is probable that these instances of cardiac hypertrophy represent unrecognized cases of hypertensive heart disease. Such a careful investigator

29. Zoll, P. M., and Weiss, Soma: Electrocardiographic Changes in Rats Deficient in Vitamin B_1, Proc. Soc. Exper. Biol. & Med. **35**: 259 (Nov.) 1936.

30. Alexander, Leo; Pijoan, Michel; Schube, P. G., and Moore, Merrill: Cevitamic Acid Content of Blood Plasma in Alcoholic Psychosis, Arch. Neurol. & Psychiat., to be published.

31. Strauss, M. B.: The Etiology of "Alcoholic" Polyneuritis, Am. J. M. Sc. **189**: 378 (March) 1935. Weiss and Wilkins.[21a]

32. Groen, J.: The Absorption of Hexoses from the Upper Part of the Small Intestine in Man, J. Clin. Investigation **16**: 245 (March) 1937.

33. Abderhalden, E., and Wertheimer, E.: Beziehungen des Vitamin B-Komplexes (insbesondere des Vitamins B_1) zum Kohlehydrathaushalt, Arch. f. d. ges. Physiol. **233**: 395, 1933.

as Hirsch [34] observed as early as 1899 that patients with "beer hearts" suffer from nephritis, and he suggested that beer drinking causes nephritis and this, in turn, cardiac hypertrophy.

Pellagra.—Patients suffering from pellagra may exhibit cardiovascular symptoms, but, in the light of present knowledge, this is attributed to the frequent association of the vitamin B_1 component in the deficiency.[21b] There is no experimental evidence that lack of vitamin B_2 is responsible for cardiovascular disease. When pellagra occurs in its pure form the heart at postmortem examination is small or normal, owing to the frequent presence of dehydration and emaciation. Histologic changes, if present, are those of brown induration.

Vitamin C.—The relation of deficiency of vitamin C to capillary fragility is established, but its rôle in cardiac disorders is not well understood. Experimental scurvy in animals has been observed to cause hemorrhages into and fatty degeneration of the cardiac muscle.[35] Rinehart [36] has stated that scorbutic guinea-pigs respond to intradermal infections with beta hemolytic streptococci with degenerative and proliferative changes in the heart valves and myocardium. This work has not been uniformly confirmed. In a recent study Taylor [37] has stated that scurvy alone produces cardiac lesions in the guinea-pig and that added infections increase neither the incidence nor the severity of the lesions. Experimental "scorbutic carditis" if allowed to become chronic results in congestive failure. In such hearts the lesions cannot be cured with the administration of cevitamic acid. Thus vitamin C can prevent such lesions but cannot cure them once the damage is done. The pathologic changes in scorbutic carditis, as found by Taylor, are those of nonspecific valvulitis, myocarditis and occasionally pericarditis. The lesions often contain gram-positive organisms, even though no organisms were injected. In the acute lesions neutrophilic leukocytes predominate, whereas in the chronic lesions endothelial cells, lymphocytes and fibroblasts are more abundant. Giant cells and vegetations are not present.

Changes in the myocardium in human scurvy have been described, but it is questionable whether such changes can be attributed to vitamin C deficiency. Darling [38] has described enlargement of the right side of the heart. Hift and Brüll [39] observed acute recurrent hemorrhagic pericarditis among the scorbutic inmates of a Russian concentration camp in Siberia. Of 325 cases of scurvy, twenty-eight showed severe pericardial effusion with congestive failure of the circulation. In six the pericardial effusion was fatal. Erdheim [40] performed postmortem examinations on thirty-one Viennese children who died as a result of scurvy in the famine year of 1918. He noted that cardiac hypertrophy and dilatation were regular manifestations in these cases and he called the hearts observed "Barlow-herz." The myocardial hypertrophy was moderate in eight, considerable in seven and "enormous" in six. Unfortunately no clinical data or histologic examinations were reported. It is mentioned that the duration of malnutrition was long and that many of the children were marantic and suffered from diarrhea. In view of the fact that osteoporosis was also present, it is probable that these children suffered from multiple deficiency, including lack of vitamins B, C and D, and that the cardiac changes were due to lack of B_1. Hess [41] mentions that x-ray examination in scurvy may reveal enlargement of the heart to the right with broadening of the base at the origin of the large vessels. The histologic studies of the heart in human scurvy do not reveal the type of myocarditis described in scorbutic animals.[42]

The relation of vitamin C deficiency to rheumatic fever and rheumatic heart disease has been extensively investigated in recent years.[43] These studies indicate that in rheumatic fever, as in other chronic infections due to inadequate intake and/or to increased utilization of vitamin C, the cevitamic acid of the blood is low and the body is partially depleted of its normal storage.[44] The capillary fragility of some of these patients is often increased and can be reduced by the administration of cevitamic acid.[45] Vitamin C, on the other hand, fails to influence the clinical course or reduce the incidence of recurrent attacks of rheumatic manifestations.[46] A causative relationship between vitamin C deficiency and rheumatic fever therefore does not exist. In spite of these negative correlations between rheumatic fever and vitamin C, it seems advisable, on the basis of general principles and recent experimental work,[37] to feed rheumatic patients with a balanced diet rich in vitamins, including vitamin C.

The increased vascular fragility in vitamin C deficiency may lead to well recognized, extensive hemorrhages and tissue damage. It is of interest that recent observations indicate that the level of the cevitamic acid in the blood of chronic alcoholic patients is frequently low and may reach the level observed in subclinical scurvy.[30] The tendency to vascular fragility may contribute to the occurrence of epidural, subdural and intracerebral ("polyencephalitis haemorrhagica Vernicke") hemorrhages so frequently observed after relatively slight or no trauma in such patients. The same factor may play a rôle in the hemorrhagic birth injuries.

Vitamin D.—Cardiac changes with right ventricular hypertrophy in rickets occasionally have been observed. Some authors have considered these to be secondary to defects in the thoracic cage with increased pul-

34. Hirsch, C.: Ueber die Beziehungen zwischen dem Herzmuskel und der Körpermuskulatur und über sein Verhalten bei Herzhypertrophy, Deutsches Arch. f. klin. Med. **64**: 597, 1899.

35. Meyer, A. W., and McCormick, L. M.: Studies on Scurvy, Stanford University, Calif., Stanford University Press, 1928. Bessey, O. A.; Menten, M. L., and King, C. G.: Pathologic Changes in the Organs of Scorbutic Guinea-Pigs, Proc. Soc. Exper. Biol. & Med. **31**: 455 (Jan.) 1934.

36. Rinehart, J. F.: Studies Relating Vitamin C Deficiency to Rheumatic Fever and Rheumatoid Arthritis; Experimental, Clinical and General Considerations: Rheumatic Fever, Ann. Int. Med. **9**: 586 (Nov.) 1935.

37. Taylor, Stephen: Scurvy and Carditis, Lancet **1**: 973 (April 24) 1937.

38. Darling, S. T.: The Pathologic Affinities of Beriberi and Scurvy, J. A. M. A. **63**: 1290 (Oct. 10) 1914.

39. Hift, R., and Brüll, L.: Ueber eine endemisch auftretende hämorrhagische Erkrankung des Herzbeutels, Wien. klin. Wchnschr. **30**: 747, 784, 1917.

40. Erdheim, J.: Ueber das Barlow-Herz, Wien. klin. Wchnschr. **31**: 1293, 1918.

41. Hess, A. F.: Scurvy, Past and Present, Philadelphia, J. B. Lippincott Company, 1920.

42. Salle, V., and Rosenberg: Ueber Skorbut, Ergebn. d. inn. Med. u. Kinderh. **19**:31, 1921.

43. Perry, C. B.: Rheumatic Heart Disease and Vitamin C, Lancet **2**: 426 (Aug. 24) 1935. Sendroy, J., Jr., and Schultz, M. P.: Studies of Ascorbic Acid and Rheumatic Fever: I. Quantitative Index of Ascorbic Acid Utilization in Human Beings and Its Application to the Study of Rheumatic Fever, J. Clin. Investigation **15**: 369 (July) 1936. Abbasy, Hill and Harris.[46]

44. Faulkner, J. M.: The Effect of Administration of Vitamin C on the Reticulocytes in Certain Infectious Diseases: A Preliminary Report, New England J. M. **213**: 19 (July 4) 1935. Abbasy, Hill and Harris.[46]

45. Schultz, M. P.: Studies of Ascorbic Acid and Rheumatic Fever: II. Test of Prophylactic and Therapeutic Action of Ascorbic Acid, J. Clin. Investigation **15**: 385 (July) 1936.

46. Abbasy, M. A.; Hill, N. G., and Harris, L. J.: Vitamin C and Juvenile Rheumatism with Some Observations on the Vitamin C Reserves in Surgical Tuberculosis, Lancet **2**: 1413 (Dec. 12) 1936.

monary resistance, but cardiac changes have been noted without alteration of the thoracic cage. Meixner[47] emphasized the fact that frequently the left ventricle is dilated and slightly hypertrophied. The usual microscopic changes, as observed by Meixner, are a slight and irregularly scattered increase in the connective tissue and a separation of the muscle fibers, changes not unlike those observed in the heart in beriberi. At present one is justified in assuming that the cardiac changes observed in rickets may be attributed to the simultaneous presence of vitamin B_1 deficiency.

COMMENT

While human cardiovascular functions may be impaired only by an excess caloric content of the diet, they may be disturbed by dietary deficiencies of several types. The body can usually eliminate disproportionate excesses of food substances effectively, but its storage capacity for certain minerals and vitamins, as well as for water, is relatively limited. The susceptibility of the body and of the cardiovascular system to deficiency depends not only on intake but also on storage and rate of utilization of the substances in question.

In order to understand clinical vitamin deficiency it is essential to appreciate that, judging from the behavior of vitamins B and C, symptoms are apt to develop when there is simultaneously present with a deficiency of these substances an elevated metabolism (caloric/vitamin ratio of Cowgill).[48] This may arise because of increased muscular activity, increased caloric intake, fever, hyperthyroidism, and the like. Under such conditions specific metabolic processes influenced by or dependent on vitamin may become disturbed and harmful chemical products may accumulate. In simple chronic undernutrition, on the other hand, because of the simultaneous and proportionate reduction of both oxidative processes and available vitamin, symptoms of any specific deficiency usually do not develop, or, if present, the symptoms are mild ("subclinical avitaminosis"). When, however, an acute strain is placed on the metabolic system of such moderately avitaminotic patients as a result of infection, fever or increased activity, the symptoms and signs of deficiency may appear with great rapidity. This is well illustrated by the behavior of chronic alcoholic patients who have contracted pneumonia or typhoid. It is also of interest that we have observed patients in whom mild manifestations of avitaminosis became temporarily aggravated when a diet rich in vitamins and calories was administered.

The proportion of the various calorigenic substances in the diet also plays a rôle in the pathogenesis of certain avitaminoses. Thus high carbohydrate or alcohol diets favor, but high protein or fat diets hinder, the development of beriberi. Finally, the functional and structural states of certain organs must be taken into consideration in the etiology of the avitaminoses, as well as of the other nutritional deficiencies. Disorders of the gastro-intestinal tract causing alterations in motor and secretory functions and in absorptive capacity may so interfere with the utilization of dietary factors that deficiency may develop in the body in spite of an adequate supply by mouth.[49] Indeed, certain deficient diets may themselves produce changes in the gastro-intestinal tract which further handicap the utilization of food substances, so that a vicious cycle is established. Severe damage to other important organs of the body can also affect the utilization of nutritional factors. Thus damage to the liver impairs the metabolism of vitamin A and protein and probably also can be responsible for other deficiency syndromes in spite of a diet suitable for a normal person. The occasional finding of cardiovascular disturbances similar to those of beriberi in patients with cirrhosis of the liver or chronic pancreatitis but who apparently have had a normal diet supports the contention that intrinsic factors, such as alteration of the function of important organs, play a rôle in conditioning dietary deficiencies.

The symptoms of deficiencies must not be considered as arising from a simple lack of specific nutritional substances in the organs affected. Vitamin deficiency is followed by changes in the intermediary metabolism which cause, first, "biochemical lesions," later, functional and, finally, structural lesions. These changes may progress from a state of easy reversibility to one of slow or of nonreversibility. It is for this reason that, depending on the exact nature and duration of a deficiency disease, substitution therapy may or may not lead to prompt or to complete restoration of normal functions.

In vitamin B_1 deficiency the disturbances of intermediary metabolism of carbohydrates and the resulting alterations in nervous and cardiovascular functions and structures are good examples of secondary and tertiary changes precipitated by avitaminosis. The individual variations in biochemical responses and in the accumulation of abnormal substances in deficiency states may explain some of the variations in symptoms and pathologic manifestations. The exact mechanism of the nutritional deficiencies is therefore more complex than it was first thought to be. We are now entering into the third stage of our knowledge in this field. The original "toxic theory" of nutritional disorders was recently abandoned with the discovery of the "deficiency theory." We are now beginning to realize, however, that the deficiency of a substance, by altering the normal pattern of intermediary metabolic processes, may lead to a secondary accumulation of "toxic" products, as, for example, lactic acid, pyruvic acid and methylglyoxal in vitamin B_1 deficiency.[50] The symptoms and changes in the body may depend on the effect of these substances on various structures. Thus the principles of "deficiency" and "toxicity" are not mutually exclusive, but interdependent.

Recognition of the fact that nutritional imbalance frequently affects the heart, the vessels, the blood and the nervous regulatory mechanisms of the circulation, singly or in various combinations, is necessary to a proper understanding of cardiovascular physiology and disease. Only by a broad and complete consideration of all the factors involved can a correlation of symptoms with bodily changes be made and preservation or restoration of health be effected.

SUMMARY

Of the vitamins, B_1 deficiency is the most important cause of cardiovascular disturbances. Beriberi with cardiovascular dysfunction is a disease of regular occurrence in the United States. Cardiac disturbances observed in human scurvy, with the exception of

47. Meixner, K.: Die Erweiterung der linken Herzkammer bei Rachitis, Wien. klin. Wchnschr. **41**: 1273 (Sept. 6) 1928.

48. Cowgill, G. R.: The Vitamin B Requirement of Man, New Haven, Conn., Yale University Press, 1934.

49. Strauss, M. B.: The Rôle of the Gastro-Intestinal Tract in Conditioning Deficiency Disease: The Significance of Digestion and Absorption in Pernicious Anemia, Pellagra and "Alcoholic" and Other Forms of Polyneuritis, J. A. M. A. **103**: 1 (July 7) 1934.

50. Peters, R. A.: Biochemical Lesion in Vitamin B_1 Deficiency, Lancet **1**: 1161 (May 23) 1936.

hemorrhagic pericarditis, and in rickets are usually due to coexisting vitamin B_1 deficiency.

Intrinsic factors, such as the metabolic state of the organism and the functional state of various organs, particularly of the digestive organs, may be as important as the intake of extrinsic factors in conditioning clinical nutritional deficiencies.

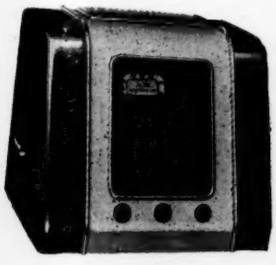
Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

ALOE CSW 12 METER SHORT WAVE DIATHERM ACCEPTABLE

Manufacturer: A. S. Aloe Company, St. Louis.

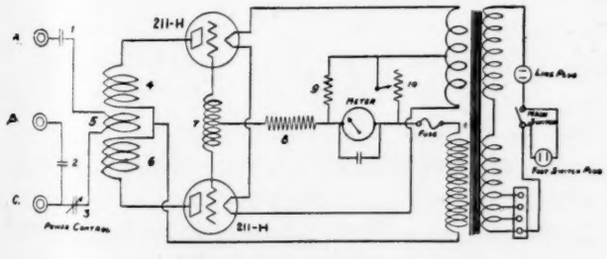
The Aloe CSW 12 Meter Short Wave Diatherm unit is intended for medical and surgical use. It is equipped for use with both pad and cuff electrodes. This semiportable unit comes in a natural wood finish with chrome ventilator grille and handles. The subcabinet has ample storage space for electrodes and equipment with two drawers and a large door beneath these.



Aloe CSW 12 Meter Short Wave Diatherm.

This machine utilizes two tubes in a half-wave self-rectifying, balanced, push-pull, tuned plate, tuned grid, oscillatory circuit. The output circuit is inductively coupled to the plate circuit and the power output is controlled by a variable air condenser in series with one patient terminal.

The total power input is approximately 300 watts under idling conditions. Under a load test the input is about 900 watts. The output is about 400 watts. This was measured by



Schematic diagram of circuit.

adjusting the supply voltage to 110 volts and using an artificial resistance load comprising two 200 watt lamps in parallel, capacitatively coupled to the patient electrodes. The coupling to the load and the output control were adjusted to give the highest output. As no acceptable means of measuring the output has as yet been proposed, this value is stated as an approximation.

Averages of Six Observations

	Deep Muscle	Subcutaneous	Skin	Rectal
Initial	96.5	91.5	87.1	99.1
Final	107.0	104.1	94.9	99.4

The firm submitted evidence to substantiate the claims for the heating ability of the unit when applied to the thigh of a living subject. Six tests were performed on three healthy male medical students by a competent investigator. Temperature readings were taken by means of thermocouples calibrated against a thermometer standardized by the Bureau of Standards. These readings were taken before and after twenty minute treatment periods at maximum tolerance of the subject. The skin surface temperature, as well as that of the muscle and subcutaneous tissues, was measured by hypodermic thermocouples. Investigations were made with cuffs measuring 23½ by 2¼ inches. The average thigh circumference was 21.1 inches. Several thicknesses of toweling were placed between the skin and the cuffs. The latter were separated 9 inches from edge to edge. The room temperature was from 71 to 74 F. and the humidity ranged from 41 to 43 per cent. The averages of the six observations are given in the accompanying table.

The unit was tried out in a clinic acceptable to the Council. In operation under actual clinical conditions, the unit rendered satisfactory service. The transformer temperature rise and the temperatures inside the cabinet taken at various levels were within the limits of safety prescribed by the Council. Burns may occur with this type of machine but are less apt to occur than with conventional diathermy and may be avoided by use of ordinary precaution.

In view of the favorable report based on the use of the cuff technic, the Council on Physical Therapy voted to include the Aloe CSW 12 Meter Short Wave Diatherm in its list of accepted devices.

COLLINS OXYFLO OPEN TOP OXYGEN TENT ACCEPTABLE

Manufacturer: Warren E. Collins, Inc., Boston.

The Collins Oxyflo Open Top Oxygen Tent (previously known as the Burgess-Collins Oxygen Tent) is designed for use in the hospital or the home. The specifications include a tent frame; cooling chamber with six pound ice capacity; two gum rubber tent fabrics fitted with three noninflammable windows; a well balanced stand adjustable horizontally and vertically, allowing the tent to be tilted; heavy cast iron base equipped with casters; art metal finish with nickel trimmings, and it is complete with oxygen regulator and oxygen analyzer. The tent and stand weigh 45 pounds and can be dismantled for convenience in storing or for transportation to the home.

The open top tent has a neck opening approximately 5 feet from the ground at its highest point and 26 inches from the floor at its lowest, accommodating anything from a baby's crib to an adult sitting up in bed. According to the firm, the open top principle makes possible an oxygen tent with several advantages: It is portable, its operating cost is modest, it is equally effective with infants or adults, and it is noiseless since no electrical connections are required to operate it. The firm claims that a 50 per cent concentration of oxygen with only a 3 or 4 liter flow may be obtained with the top of the tent open. The Council found a slightly higher flow necessary.

The unit was investigated in a clinic acceptable to the Council. The observations were started with the patient lying in a prone position. The temperature of the room was 78 F. and the temperature of the inside of the tent was 75 F. with a 38 per cent relative humidity. The concentration of oxygen was taken during normal breathing periods and after two minute runs of rapid (60 per minute) respirations in both prone and sitting positions. In all these observations the concentration of oxygen dropped below 50 per cent only once, and then only to 49 per cent. It went as high as 72 per cent. The flow of oxygen was regulated at 5 or 10 liters per minute. By increasing the flow, the concentration could be held well over 50 per cent during periods of rapid breathing. During these tests the temperature in the tent ranged from 68 to 74 F. The humidity rose from 42 per cent to 54 per cent. The data obtained in these observations essentially substantiated the claims of the manufacturer. The tent handled easily and operated well during the test; the patient was comfortable, with no complaints of tightness at the neck and apparently there was no leakage at that point. The only disadvantage is that the person lying flat with rapid respiration can reduce the oxygen saturation, but if the rate of flow of the oxygen is increased a good concentration may be regained.

In view of the favorable report on the efficiency of the unit in actual clinical practice, the Council voted to include the Collins Oxyflo Open Top Oxygen Tent in its list of accepted devices.

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SATURDAY, SEPTEMBER 4, 1937

THE DUKE-FINGARD METHOD IN RESPIRATORY DISEASES

The New York *World Telegram* for August 24 published, on its front page, a feature article syndicated by Science Service concerning the so-called Duke-Fingard method for the treatment of asthma, tuberculosis and other respiratory diseases. Behind this item is the rather slimy trail of an attempt to force on the medical profession a secret method of treatment, unsupported by anything resembling acceptable clinical evidence.

Readers of *Time* will perhaps remember an article published Jan. 18, 1937, which called attention to the career of David Fingard. Briefly, Mr. Fingard appears to be a chemist from Canada who came in contact years ago with the development by one J. Rudolph Duke (perhaps J. J. or just plain Rudolph) of a method of treating asthma by the inhalation of air modified by a mixture of antiseptics and oils. The method was apparently promoted with little success in California and in China. Eventually Mr. Fingard appeared in London en route, as he said, to the Soviet Republic. Finding sympathetic listeners in Great Britain, he remained there until he left for the United States in December, the government having refused him an extension of his stay. Previously he had endeavored to obtain an official trial of his method by the British government. However, Sir Kingsley Wood, Minister of Health, failed to authorize such an experiment. Attempts were made in Parliament to force an investigation, but in each instance these attempts failed. Mr. Fingard obtained in London a stanch supporter in the dowager Duchess of Suffolk and Berkshire, a daughter of the late Chicago department store executive and owner, Levi Leiter. In the development of his promotion in Great Britain another prominent factor has been Lieutenant-General Sir Harold Ben Fawcus, K.C.B., C.M.G., D.S.O., D.C.L., M.P. and D.P.H., who is director general of the British Red Cross. Quite recently Messers. Fawcus, Fingard and Greene arrived in the United States. They seem to have been freely introduced and in general recommended by Dr. Clarence Lieb. Because of his connection with the British Red Cross, Lieutenant-General Fawcus and Mr. Fingard were tendered a banquet by members of the American Red Cross and other official agencies. They offer as evidence of their standing photostatic copies of letters from the Red Cross with the list of guests. At present, according to Mr. Greene, Mr. Fingard is in Canada endeavoring to straighten out with officials in that country certain matters of an extralegal financial character which have caused him considerable embarrassment in some of his travels in the British empire.

Mr. Greene presents also a photostatic copy of a list of distinguished citizens of Winnipeg who have recently tendered an official luncheon to Mr. Fingard.

Now what is the remarkable discovery which has attracted such a list of notables, political, aristocratic and financial, in its support? From what can be ascertained, the method involves the use of a cabinet containing twelve trays of a liquid which is an oily brown mixture in "carefully worked out" proportions of creosote, phenol, iodine, garlic, aromatic essences and essential oils and glycerin. Air is dried by passing through a short tube into a box containing calcium chloride, which is said to "filter off dust and microbes." It is then sucked into the apparatus by a small electric fan and, after being heated to between 70 and 80 F., is driven over the twelve trays of medicaments and out into the room. The patient breathes this mixture of air and whatever it can pick up, beginning with three hours a day and going on to sixteen hours a day. It is alleged that by this method of treatment asthma is brought under control, recovery occurs in hopeless cases of tuberculosis, and patients with sinus trouble are freed of their disturbances.

In the process of British promotion an investigation was made on some patients, and the bibliography which follows is the only scientific evidence thus far available as to the merits of the treatment:

Fawcus, H. B.; Greene, A. C., and Houston, J. W.: A Short Account of the Duke-Fingard Treatment for Diseases of the Respiratory Passages, *Practitioner* **37**:740 (Nov.) 1936.

Fraser-Harris, D. F.: The Duke-Fingard Method of Medication as Applied to the Respiratory Tract, *Medical Press and Circular* **93**:381 (Oct. 28) 1936.

Thornton, J. Raymond; Fraser-Harris, D. F., and Vaughan, V. St. George: The Duke-Fingard Inhalation: Some Results Obtained in Chronic Respiratory Disease, *Medical Press and Circular* **94**:151 (Feb. 17) 1937.

Salén, Ernst B.: Duke-Fingard Treatment of Diseases of Respiratory Tract, *Svenska läkartidningen* **34**:681 (May 7) 1937.

The method has been studied in Great Britain in 1935, 1936 and part of 1937, certainly time enough,

if it possessed any real merit, to have received recognition by the British medical profession.

The case reports which appear in the bibliography cited are far from convincing. The evidence in relationship to cases of asthma, tuberculosis, bronchiectasis and sinus disease is no better than that which has been published from time to time for a dozen other methods of treatment not half as fantastic. Mr. Fingard refuses to reveal a quantitative formula or anything even resembling a complete qualitative formula for the compound of drugs he uses. The details regarding the process have apparently been submitted to a board of trustees and are now locked away in a safe in Great Britain. In support of their method, Mr. Greene submits a number of letters from representatives of the Red Cross in various countries indicating that the Red Cross connection of Lieutenant General Fawcus is being used freely to introduce this method in various parts of the world. Inquiry at the headquarters of the American Red Cross in Washington indicates that a luncheon was tendered to Lieut. Gen. Sir Harold Fawcus, The Hon. Sir Arthur Stanley, G.B.E., Mr. Fingard and General Sir Hubert Gough, G.C.M.G., K.C.B., K.C.V.O., who are trustees for the Fingard treatment. The American Red Cross has said, however, that it will do nothing whatever to exploit the Duke-Fingard asthma treatment.

Here then is a method of treatment secret in character, fantastic in its administration, unsupported by any scientific evidence, promoted by a chemist and financiers whose records are far from clear, supported by letters of politicians, military officers and aristocrats. The American medical profession has established the Council on Pharmacy and Chemistry as an official body available for testing and evaluating new remedies and new methods of treatment when the investigators and the promoters are willing to state the nature of the treatment and to submit it to controlled, scientific experimentation. Obviously the British promoters of the Duke-Fingard treatment have no intention of submitting to such an investigation. Until they do so they can hardly anticipate a hearing before the critical bar of American medical opinion. Mr. Greene, when he visited the headquarters of the American Medical Association in an endeavor to induce belief in the Fingard method, was kind enough to leave an outline of the proposed method of promotion which is headed with the following naive statement:

"Dear Greene: Would you be good enough to get this published in one of the American medical journals? H. B. Fawcus."

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION has no intention of lending its columns to such an exploitation. Whether or not some of our commercially minded medical publications will yield to the blandishments of this pseudo-scientific embassy, as Science Service yielded, remains to be seen.

HYPOGLYCEMIC THERAPY IN TRYPANOSOMIASIS

More than fifty years ago, Pasteur and his co-workers thought that acquired immunity to specific infections might be due to the destruction of food factors in the body necessary for bacterial growth. This so-called specific exhaustion theory, however, was not substantiated. The chief objection to it was the failure to conceive of a specific antiserum capable of carrying a specific chemical deficiency to another animal.

The recent work of Schern and Artagavegtia-Allende [1] of Montevideo brings this theory from the purely historical to a stage of possible practical importance. Schern observed some thirty years ago that trypanosomes in citrated blood samples from recently infected rats retained a high degree of motility for several hours at room temperature. The motility of these parasites, however, was much more poorly retained when they were isolated from the animals in the later stages of experimental infection. The parasites thus obtained lost all motility within ten to fifteen minutes at room temperature. Further it was found that these apparently moribund trypanosomes could be revived by the addition of a small amount of normal rat serum and would remain actively motile for several hours at room temperature. The addition of certain aqueous tissue extracts, especially liver, produced the same results. From the biochemical analysis Schern and his co-workers concluded that the rejuvenation was due solely to the sugar content. Hence it became theoretically possible that the loss of motility in late stages of trypanosome infections might be due to the sugar depletion of the experimental animal. Further confirmation was obtained by subsequent studies of the sugar content of the tissues in long standing trypanosome-infected animals. Observations by the Jancsós [2] lent support to this view.

In an endeavor to find methods of practical therapeutic application, Schern and his co-workers found that rats could be rendered almost glycogen free by prolonged starvation. This procedure, however, did not make the rats immune to experimental trypanosomiasis, and partially starved rats usually died more quickly than the normally fed controls. Finally, these investigators tested the effect of hypoglycemia following intoxication with "synthalin"—an organic preparation once offered for the treatment of diabetes. This toxic agent causes glycosuria and polyuria with a rapid decrease in blood sugar and hepatic glycogen in rats. When it was injected in divided doses on the fifth, sixth and seventh days of experimental trypanosomiasis in rats, the parasites disappeared from the blood stream and the life of all rats was prolonged with the apparently permanent cure of about 75 per cent. When it was given prophylactically, the animals were rendered

1. Schern, Kurt, and Artagavegtia-Allende, Ricardo: Ztschr. f. Immunitätsforsch. **89**: 21 (Sept.) 1936.
2. von Jancsó, N., and von Jancsó, H.: Ztschr. f. Immunitätsforsch. **85**: 81 (May) 1935.

relatively insusceptible to the experimental infection. While this hypoglycemic therapy appears to be a confirmation of the old Pasteur exhaustion theory, the effectiveness of "synthalin" may be due to other factors. Thus Schern and his co-workers found that the preparation used contains a co-enzyme, which increases the efficiency of the starch-splitting enzymes in human saliva. When added to a culture of yeast, it at first increases the rate of gas production but is followed by a complete inhibition of fermentation presumably from its effect on the sugar-splitting enzymes. A similar effect on trypanosomes is therefore a possibility.

Interesting as these observations are, their practical significance awaits further investigation and the careful analysis of the factor or factors which cause these differences in trypanosome behavior in infected rats. Certainly none of the results so far reported can as yet be interpreted in whole or in part as necessarily related to human parasitic or bacteriologic infections.

THEORIES ON THE CAUSES OF SUICIDE

Suicide and its causes are matters of general interest primarily because suicide represents a voluntary attempt to substitute an unknown state for a known one—a step frequently causing hesitation in other less radical human decisions. The general attitude toward suicide is much affected by the emotions, religion and customs of a people. Hence it has been frequently noted that the numbers of suicides, the apparent precipitating causes and the methods by which self destruction is accomplished or attempted have varied widely in different parts of the world at different periods.

Review of some of the recent studies of the subject reveals a disparity in both approach and conclusions. Thus comparison of suicides among civilized and primitive races has been reported by Zilboorg.[1] He points out that the popular reaction to the act is confused and one hears with apparently equal frequency either that it takes great courage to commit suicide or that only a coward would kill himself. That the rate of suicide increases with the development of civilization or that it is a result of some psychopathologic process and intimately connected with some form of mental disease are misconceptions, he believes. He quotes Steinmetz, who says "It seems probable from the data I have been able to collect that there is a greater propensity to suicide among savage than among civilized peoples."

According to Vorwahl,[2] the rate of suicide varies also in the different races. He states that before the war the suicide rate in Germany was five times that in Italy and ten times that of Spain. Gross statistics of this nature, however, are difficult to compare, since so many elements are involved, including the method and source of compilation and the political, economic, religious or social factors, any one of which might be of more influence on the apparent suicide rate than the mere difference in race.

Pacheco[3] in writing on suicide in India states that the most usual method of suicide among males there is by poisoning. Burning, poisoning, jumping from heights and drowning are common among female suicides. He further states that the causes that lead to suicide among males are financial difficulties and want of employment, and, among females, ill treatment at the hands of husbands or mothers-in-law, or loss of children. Available records indicated that more suicides occur in the hot season than in any other.

It has been believed that studies of attempted suicide might throw light on the whole problem. In the interpretation of such studies, however, it must be remembered that there is one fundamental difference between attempted suicides and actual suicides, and that is the difference between failure and success. The possibility that this diversity even may be actually so planned emphasizes the noncomparability. Hopkins[4] carried out an investigation on 656 attempted suicides admitted to the Smithdown Road Hospital of Liverpool. His figures indicate that unsuccessful attempts occur much more commonly than successful ones. It was noted that the relative incidence in the two sexes was six males to five females but that up to the age of 25 female attempts were twice as frequent as male.

Even more recently another investigation from this angle has been reported by Moore.[5] From Jan. 1, 1915, to Jan. 1, 1936, the Boston City Hospital admitted 1,147 patients who had attempted suicide. Twenty-one were dead on arrival. The outcome was known in 464 of the males and 566 of the females (there were 100 more women than men in the series). Fifty-five women, 9 per cent of the females, were successful; seventy-two men, 13 per cent of the males, succeeded. It was also noteworthy that 61 per cent of the women as against 33 per cent of the men were between the ages of 16 and 30. Records of motivation, Moore points out, are of questionable validity. Nevertheless the admitted cause in seventy-one female and twenty-seven male attempts as "domestic trouble" may possibly be significant. Seven main methods were used by each sex group, with poison by mouth and inhalation of gas leading for both. In the former, iodine by mouth was the most popular and least effective choice.

The relation of suicide to mental disease has been the subject of frequent study. Jameison[6] recently reviewed the clinical records of 100 patients who committed suicide. The study included a diagnostic enumeration, a correlation of the intensity of desire for suicide with the

1. Zilboorg, Gregory: Suicide Among Civilized and Primitive Races, Am. J. Psychiat. **92**: 1347 (May) 1936.
2. Vorwahl, H.: Erblichkeit, Rassenhygiene und Bevolkerungspolitik, München med. Wchnschr. **83**: 767 (May 8) 1936.
3. Pacheco, J. N. J.: Suicide, Indian M. Gaz. **71**: 720 (Dec.) 1936.
4. Hopkins, Frederick: Attempted Suicide: An Investigation, J. Ment. Sc. **83**: 71 (Jan.) 1937.
5. Moore, Merrill: Cases of Attempted Suicide in a General Hospital: A Problem in Social and Psychologic Medicine, New England J. Med. **217**: 291 (Aug. 19) 1937.
6. Jameison, G. R.: Suicide and Mental Disease, Arch. Neurol. & Psychiat. **36**: 1 (July) 1936.

type of psychosis, and an analysis of the apparent motives behind the act itself. He concluded that probably many persons who commit suicide today are suffering from personality disorders. The potential suicidal patient may, however, be normal in an intellectual sense. On the controversial issue of family background, his material indicated that predisposition to return to psychologic levels of immaturity exists in certain persons.

Zilboorg,[7] in another discussion of the subject, suggests that a mere review of the various "difficulties" which patients happen to endure cannot serve as a criterion of the causation of suicide. Such facts as a sense of inadequacy, complex family relationships and neurotic or psychotic complications are in themselves of little clinical value in the evaluation and understanding of suicide. He believes that an intimate study of the details of suicide frequently reveals the ceremonial quality of a number of self-inflicted deaths and offers psychologic links with the suicides among many primitive peoples. With most of Zilboorg's methods and conclusions, Wile [8] takes definite issue. Wile believes that Zilboorg's psychoanalytic concepts are not to be accepted as prima facie evidence, especially when they lack the validity of exact statement.

It is obvious that no unity of thought yet surrounds the causes of suicide, in spite of centuries of study and speculation. It would seem to be relatively safe to believe that the causes leading to suicide are affected by different circumstances at different times. One can also accept suicide as a definitely asocial and minority phenomenon.

Current Comment

VITAMIN C AND PYORRHEA ALVEOLARIS

Pyorrhea may be one of two types: a local inflammatory disease, beginning at the gingival margin, or a diffuse atrophic disease of systemic origin. According to Boyle and his co-workers,[1] systemic pyorrhea alveolaris may be readily produced in guinea-pigs by vitamin C deficiency. Within six months after guinea-pigs have been placed on a vitamin C free diet, loosening and wandering of the teeth are demonstrable. X-ray studies of sagittal sections of the heads reveal marked rarefactions of the alveolar bone with widening of the periodontal membrane. The microscopic details are identical with those found in human periodontal disease of the atrophic type. Similar changes take place at a slower rate in guinea-pigs maintained for many months on a relatively low cevitamic acid intake. They have not yet studied the effectiveness of vitamin C therapy as a cure of experimental pyorrhea, nor has the alleged therapeutic value of tooth pastes plus massage thus far been confirmed.

7. Zilboorg, Gregory: Considerations on Suicide, with Particular Reference to That of the Young, Am. J. Orthopsychiat. **7**: 15 (Jan.) 1937.
8. Wile, Ira S.: Further Considerations on Suicide, Am. J. Orthopsychiat. **7**: 235 (April) 1937.
1. Boyle, P. E.; Bessy, O. A., and Wolbach, S. B.: Proc. Soc. Exper. Biol. & Med. **36**: 733 (June) 1937.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

State Provides Drugs for Venereal Diseases.—As a part of its campaign against syphilis, the state department of health will distribute without charge drugs for the treatment of venereal diseases. Heretofore this service has been available only for the treatment of indigent persons, newspapers reported.

ARKANSAS

Changes in Health Department.—Dr. Arthur M. Washburn has been placed in charge of the division of communicable disease control of the state department of health, Little Rock, and Dr. Doyle W. Fulmer, Benton, of the division of malarial control, it is reported. Both physicians recently returned from Harvard University Medical School, Boston, where they took a year's graduate work on leave of absence from the state department. Dr. Washburn graduated from Rush Medical College, Chicago, in 1917, and formerly served as health officer of the city of Blytheville and Mississippi County. Dr. Fulmer graduated at the University of Arkansas School of Medicine in 1932.

CALIFORNIA

Society News.—At a meeting of the Hollywood Academy of Medicine, August 19, Dr. John S. Chase spoke on "Aviation Medicine." Douglas Shearer, chief sound engineer, Metro-Goldwyn-Mayer Studios, discussed the related psychophysical aspects of flying. —— Dr. Clarence O. Sappington, Chicago, addressed the industrial accident section of the Los Angeles County Medical Association at a joint meeting with the Casualty Insurance Adjusters' Association, August 12, on "Practical Problems in Industrial Health and Disease."

Changes in the Faculty at University of California.—Announcement is made of the following promotions on the faculty at the University of California Medical School, San Francisco, among others, effective July 1:

Dr. Ottiwell W. Jones Jr., to be associate professor of surgery.
Drs. Paul Campiche, Thomas F. Mullen, Mary F. Montgomery and Robertson Ward, assistant clinical professors of surgery.
Dr. Leon Goldman, assistant professor of surgery.
Dr. Dorothy A. Wood, associate clinical professor of anesthetics.
Dr. Clark M. Johnson, associate clinical professor of urology.
Dr. Francis J. Rochex, assistant clinical professor of medicine.
Dr. Isabella H. Perry, assistant professor of pathology.
Dr. Warren D. Horner, associate clinical professor of ophthalmology.

The title of Dr. Albert J. Houston has been changed from clinical professor to clinical professor emeritus of otorhinolaryngology, and that of Dr. Herbert C. Moffitt from clinical professor to clinical professor emeritus of medicine.

CONNECTICUT

Annual Clinical Congress of State Society.—The annual clinical congress of the Connecticut State Medical Society will be held at New Haven, September 21-23. The following speakers will appear on the program, among others:

Dr. Francis C. Grant, Philadelphia, Treatment of Cranial Trauma.
Dr. Joseph Earle Moore, Baltimore, Treatment of Early Syphilis.
Dr. Robert H. Aldrich, Boston, Treatment of Burns with a Compound of Aniline Dyes.
Dr. Frederick C. Irving, Boston, The Place of Cesarean Section.
Dr. Isidor S. Ravdin, Philadelphia, Surgical Diseases of the Extrahepatic Bile Ducts.
Dr. William B. Castle, Boston, Treatment of Various Types of Anemias.
Dr. Emil Novak, Baltimore, Treatment of the Menopause.
Dr. Maurice Lenz, New York, Clinical Experience with the Use of Radium and X-Rays in the Treatment of Cancer.
Dr. Oskar Diethelm, New York, Treatment of Psychoneurotic Disorders.
Dr. Arthur Steindler, Iowa City, Fracture Deformity of the Upper Extremities—Wrist and Forearm.
Dr. Claude S. Beck, Cleveland, The Treatment of Coronary Sclerosis and Angina Pectoris by Grafting a New Blood Supply to the Heart.
Dr. Warfield T. Longcope, Baltimore, Some Problems in Relation to Bright's Disease.

There will be symposiums, clinics and panel discussions. Wednesday the section on anesthesia will meet with the American Society of Anesthetists with the following speakers: Drs. Henry S. Ruth, Philadelphia, "Problems in Resuscitation"; Louis S. Goodman, New Haven, "The Chemical Mediation of Nerve Stimuli"; Paul M. Wood, New York, "Modern Anesthesia for Upper Abdominal Surgery"; Meyer Saklad, Provi-

dence, R. I., "A Method for the Collection and Analysis of Anesthetic and Surgical Statistics." The Connecticut Medical Examiners' Association will meet during the congress and Dr. Robert P. Knapp, Manchester, will address the Connecticut Public Health Association on "Progress of Industrial Medicine."

FLORIDA

District Meetings.—The first annual meeting of the Northeast Committee District (C) of the Florida Medical Association will be held at St. Augustine, September 23, at the Munson Hotel. Dr. Charles C. Grace, president, St. Johns County Medical Society, will give the address of welcome. Other speakers will include Drs. Samuel R. Norris, Jacksonville, on "Some Complications of Labor"; Thomas M. Palmer, Jacksonville, "Congenital Osseous Syphilis," and Hugh West, DeLand, "Anomalies of Intestinal Rotation and Report of a Case." The first annual meeting of the Southeast Committee District (F) was held at Miami, September 3, in the Columbus Hotel, with the Dade County Medical Society acting as host. Among the speakers were Drs. Lloyd J. Netto, West Palm Beach, "Ectopic Pregnancy"; Kenneth Phillips, Miami, "Résumé of Fever Therapy," and Shaler A. Richardson, Jacksonville, "The Treatment of Retinal Detachment."

ILLINOIS

Personal. — Dr. Amos W. Ball, Rushville, was guest of honor at a dinner given by the Rushville Rotary Club, August 10, to celebrate his completion of fifty years in the practice of medicine. He was presented with a Rotary pin. Speakers included Drs. Everett P. Coleman, Canton, councilor of the fourth district of the state medical society; Don W. Deal, Springfield; Perry H. Stoops, Ipava; Henry O. Munson and Frederick D. Culbertson. Dr. Ball graduated in 1886 from Missouri Medical College, St. Louis.

Advisory Board to Division for Handicapped Children.—Fifteen persons have been named by the governor to a newly created advisory board of the division for handicapped children, state department of public welfare. Dr. Paul H. Harmon is director of the division and members of the committee include: Drs. Henry B. Thomas, Edward L. Compere, Philip Lewin, Julius H. Hess, Edwin W. Ryerson, Robert A. Black, Philip H. Kreuscher, all of Chicago; Frank J. Jirka, state health director; Gerald M. Cline, Bloomington; Fred S. Etherton, Carbondale; Rolland L. Green, Peoria; Harold M. Camp, Monmouth; Charles S. Skaggs, East St. Louis; Miss Mable Dunlap, Moline, and Mark Penney, state board of vocational rehabilitation, Springfield.

INDIANA

Personal—The completion of fifty years in the practice of medicine was observed by Drs. Robert E. Trout, Oaktown; Simon P. Schroeder, Nashville, Ill., and Isaac H. Doolittle, South Bend, at a joint celebration at Dr. Trout's home in Oaktown, July 4-5.——Dr. Edith M. B. Schuman, Bloomington, has been appointed assistant physician at Indiana University, succeeding Dr. Margaret A. T. Owen, who will enter private practice.

New Cancer Clinic. — The Indianapolis City Hospital, Indianapolis, has received a gift of $100,000 to establish and endow a cancer clinic. Edwin L. Patrick, president and secretary of the C. B. Cones & Son Manufacturing Company, is the donor. The clinic will be named Patrick Hall in memory of his wife, the late Mrs. Katheryn Cones Patrick, and her father and mother, newspapers announced. Complete equipment for the treatment of cancer, including x-ray machines and radium, will be provided and accommodations for twenty-two patients will be available. Dr. Charles W. Myers is superintendent of the hospital.

IOWA

Norman Baker Fined—One Day in Jail. — Norman G. Baker, operator of the Baker Hospital and identified with alleged cancer cures, was fined $1,000 and sentenced to one day in the Muscatine County Jail, Muscatine, by Judge D. V. Jackson in district court, August 14, following his plea of guilty to an indictment charging him with practicing medicine without a license, according to the Davenport *Democrat*. The plea was entered through Baker's attorney, J. F. Devitt, and the indictment was returned by a Muscatine County grand jury Sept. 30, 1935. The one day jail term will be served concurrently with a similar sentence imposed by the state supreme court when Baker was found guilty of contempt for violating, through the fiction of a lease of the Baker Hospital to Dr. Johnson L. Statler and others, an order enjoining him from practicing medicine in Iowa (THE JOURNAL, July 31, p. 375).

KANSAS

Election of Medical Board.—Dr. Oliver S. Rich, Wichita, was recently elected president of the Kansas State Board of Registration and Examination and Dr. John F. Hassig, Kansas City, was chosen secretary. The latter succeeds Dr. Charles H. Ewing, Larned, who served in the position from January 1931 to July 1937; he is no longer a member of the board. All matters pertaining to medical registration should be addressed to Dr. Hassig, 804 Huron Building, Kansas City. Other members of the board are Drs. Henry E. Haskins, Kingman; James E. Henshall, Osborne; Mirl C. Ruble, Parsons, and Frederick S. Hawes, Russell.

KENTUCKY

Society News.—Dr. Edward C. Rosenow, Rochester, Minn., addressed the Southwestern Kentucky Medical Society at its quarterly meeting in Arlington, August 10, on infantile paralysis. Drs. James Vernon Pace, Paducah, and George W. Payne, Bardwell, spoke on "Appendicitis in Childhood" and "Chronic Nephritis" respectively.——Dr. Irvin Abell, Louisville, President-Elect of the American Medical Association, was the guest of honor at the quarterly meeting of the Muldraugh Hill Medical Society, Elizabethtown, August 12.——Dr. Francis M. Massie, Lexington, addressed the Bourbon County Medical Society, Paris, August 19, on empyema.——Dr. John Y. Harper, Jenkins, addressed the Letcher County Medical Society at a recent meeting in Jenkins on "Fractures of the Femur and Their Treatment."

MAINE

Personal.—Dr. Herbert R. Kobes, Augusta, has been placed in charge of a maternal and child health program to be carried out by the state department of health with social security funds.

Society News.—At the annual meeting of the Maine Medico-Legal Society at Belgrade Lakes, June 22, the following officers were elected: Drs. John G. Towne, Waterville, president; Oscar F. Larson, Machias, vice president; George L. Pratt, Farmington, secretary, and William Holt, Portland, treasurer.

MARYLAND

Semiannual Meeting of Medical and Chirurgical Faculty.—The semiannual meeting of the Medical and Chirurgical Faculty of the State of Maryland will be held at the Washington County Hospital, Hagerstown, September 27. According to the preliminary program, Dr. Samuel F. Marshall, Boston, will discuss "Surgical Indications for and Surgical Treatment of Peptic Ulcer," and Dr. Frank H. Lahey, Boston, "Diagnosis and Management of Thyroid Disease." Dinner will be at the Alexander Hotel in the evening.

New Syphilis Clinic.—The Baltimore city health department opened a new clinic for the diagnosis and treatment of congenital syphilis at 1516 Madison Avenue recently. The new service has been established for babies born of infected mothers in families that are unable to afford the services of a private physician. The clinic will be under the joint supervision of the bureaus of venereal diseases and child hygiene, so that the children will receive the benefits of pediatric advice as well as of diagnostic and treatment service for syphilis.

MICHIGAN

New Health Districts. — Alger and Schoolcraft counties have organized a joint district health department and selected Dr. Ervin J. Brenner, East Jordan, as health officer. He will have headquarters at Manistique. Ontonagon and Baraga counties have planned a similar organization, with Dr. Clifford C. Corkill, Fennville, as director. Headquarters will be at L'Anse.

Changes in the Faculty.—At a recent meeting of the board of regents of the University of Michigan, Ann Arbor, the following promotions on the staff of the medical school were announced:

Henry C. Eckstein, Ph.D., to be associate professor.
Dr. Ralph G. Smith, associate professor of pharmacology.
Dr. John L. Law, assistant professor of pediatrics and infectious diseases.
Dr. Jacob Sacks, assistant professor of pharmacology.

Testimonial to Physician.—Dr. Leo G. Christian, Lansing, chairman of the legislative committee of the Michigan State Medical Society, was honored by the Ingham County Medical Society at its meeting in July for his work in bringing about the passage of the basic science law. A resolution was unanimously adopted expressing the society's appreciation, and a Tiffany watch was presented to him. In addition the society dedicated its July bulletin to him.

State Society Officers Visit Counties.—Officers and councilors of the Michigan State Medical Society made a tour of the county medical societies of the Upper Peninsula during August and "state society meetings" were regular features of the programs of the various units. The following schedule was announced:

Chippewa-Mackinac at Sault Ste. Marie, August 17.
Luce and Schoolcraft at Blaney, August 17.
Marquette-Alger at Marquette, August 18.
Upper Peninsula Medical Society annual meeting at Houghton, August 19-20.
Ontonagon at Ontonagon, August 23.
Gogebic at Ironwood, August 23.
Dickinson-Iron at Crystal Falls, August 24.
Menominee at Menominee, August 25.
Delta at Escanaba, August 25.

MINNESOTA

Dr. Meyerding on Leave of Absence.—Dr. Edward A. Meyerding, St. Paul, secretary of the Minnesota State Medical Association since 1924, has been granted a year's leave of absence without pay, beginning September 1. Mr. R. R. Rosell, now field secretary, has been appointed executive secretary of the association. Dr. Meyerding will remain as executive secretary of the Minnesota Public Health Association. In a statement to members of the association, it was explained that the pressure of work with the two organizations made it necessary for Dr. Meyerding to ask to be relieved of the medical secretaryship for a year.

"Divine Healer" Fined.—A. C. Martin pleaded guilty in the district court at Shakopee to the charge of practicing medicine without a license and was sentenced to pay a fine of $200 and costs or serve one year in the McLeod County jail. He paid the fine. For some time Martin had been making weekly trips to Brownton, where he had a hotel room for the reception of patients. He also operated in Pine City and Arlington. He is listed in the Minneapolis city directory as a "healer" residing at 1916 Hennepin Avenue. He prescribed alum, boric acid and iodized salt dissolved in water and applied externally to the neck and throat for goiter; he also suggested and furnished "gland tablets" to be taken internally. According to the state board of medical examiners, he also applied some massage. He admitted that he had never studied medicine but stated that he had been a farmer and a traveling salesman.

MISSOURI

New Psychopathic Institute.—Plans for a new $1,000,000 city psychopathic institute in St. Louis, named in honor of the late Dr. Malcolm A. Bliss, have been announced. The new building will be six stories tall and occupy the block north of City Hospital, bounded by Grattan Street, Park Avenue, and Dillon and Carroll streets. It will accommodate 185 patients, with 142 beds for white patients and forty-three for Negroes. The site cost about $109,000 and funds for the entire project came from a 1934 bond issue and a PWA grant, newspapers reported. The institute will be primarily for the study of new and borderline cases, the latter to be segregated from the actually insane. The new building will be ready about March 1939. Dr. Bliss, in whose honor it is named, was for many years associated with the city institutions. He died in 1934.

MONTANA

Society News.—Dr. E. Martin Larson, Great Falls, was elected president of the Montana Health Association at its annual meeting in Great Falls. Dr. William F. Cogswell, Helena, remains as secretary.

NEW JERSEY

Society News.—The Society of Surgeons of New Jersey will hold its twenty-fifth anniversary meeting in Trenton, November 20.——At a meeting of the Middlesex County Medical Society, June 16, in Metuchen, speakers were Drs. Harry J. White, Metuchen, on "Early Recognition of Pulmonary Tuberculosis"; Walter Grossman, Metuchen, "Pulmonary Cavitation—Pathologic Types," and Paul Geary, Plainfield, "Treatment of Tuberculous Pulmonary Cavitation."——Dr. Earl W. Fuller, Greystone Park, will address the Bergen County Medical Society, Hackensack, September 14, on "Mental Diseases."

Personal.—Dr. Irvin E. Deibert, Haddonfield, has been reelected president of the state board of health and E. W. Smillie, V.M.D., Plainsboro, has been elected vice president. ——Dr. David A. Kraker, Newark, was the guest of honor at a dinner July 16, given by officers of the 303d Medical Regiment, U. S. Army Reserve Corps, observing his completion of fifteen years as commander of the regiment. He received an engraved saber as a memento.——At a meeting of the Hunterdon County Medical Society, Glen Gardner, July 27, certificates of fifty years of practice and engraved golden keys were presented to Drs. Francis Asbury Apgar, Oldwick; Harry M. Harman, Frenchtown, and Edward W. Closson, Lambertville.

NEW YORK

Smallpox at Niagara.—Eleven cases of smallpox occurred in Niagara Falls and the town of Niagara between June 21 and August 3, *Health News* reported August 16. The cases were limited to four related households. Twenty-two known immediate contacts were vaccinated and are under strict quarantine and about 200 other persons in the immediate neighborhood affected have been vaccinated. The outbreak was believed to be sufficiently under control that visitors to Niagara Falls need have no special concern, the bulletin said.

Director of Research Appointed at Saratoga.—Oskar Baudisch, Ph.D., recently of Stockholm, Sweden, has been appointed director of research at the Simon Baruch Research Institute for Balneology and Hydrology to be established at the state spa at Saratoga Springs. Dr. Baudisch is a native of Austria and received his doctorate at the University of Zurich, Switzerland, in 1904. From that time until 1921 he was associated with various universities in Europe. In 1921 he became research associate at Yale University, New Haven; from 1923 to 1929 was on the staff of the Rockefeller Institute for Medical Research, New York, and again was research associate at Yale from 1929 to 1933. Recently he has been research associate at the University of Stockholm, Sweden. Plans for the establishment of the research institute have not been completed.

New York City

Aid for Nurses with Tuberculosis.—Nurses in Manhattan and vicinity are forming an auxiliary to Stony Wold Sanatorium, Lake Kushaqua, to provide care for nurses with tuberculosis. Stony Wold is an institution for the care and treatment of women and girls exclusively. It has a small endowment and is otherwise supported by patients, auxiliaries, donations and endowed free beds. At present there are thirteen nurses in the sanatorium, only one of whom is paying full rates for her care. Miss Lillian Amelung, 598 Madison Avenue, is executive secretary of the auxiliary.

University News.—The class of 1912 of the College of Physicians and Surgeons of Columbia University held its twenty-fifth reunion recently at a dinner in New York, with Dr. Frank R. Mount, Portland, Ore., president of the class, as toastmaster. It was reported that eighty-three of the eighty-six members of the class are living, all but one active in medical practice. Among other statistics it was reported that nineteen of the class are members of medical school faculties; fifteen hold federal, state or municipal medical offices. Members of the class are affiliated with 126 hospitals and are authors or co-authors of thirty-seven textbooks.

Smallpox on Ocean Liner.—A liner carrying seventy-seven passengers and a crew of 128 was held in quarantine for six hours when it came into port from South America with a case of smallpox on board, August 19. Every one on board had been vaccinated by the ship's physician as soon as the disease was discovered and the patient had been isolated with a special steward to care for him. Passengers who had New York addresses or who planned to stay in New York were released with the understanding that they would be kept under surveillance by the health department during the period of incubation. Out of town passengers agreed to report to their local health officers. Members of the crew were not allowed to have shore leave unless they could prove residence in New York. The smallpox patient, an 80 year old man, was removed to the Kingston Avenue Hospital for Contagious Diseases.

City Ends Care of Mental Defectives.—New York City officially discontinued the treatment of mentally defective children as a municipal function July 31 with the transfer of a group of eighteen from the Children's Reception Hospital to the Newark State School, Newark. The children were once inmates of the old New York City Children's Hospital on Randall's Island, which was razed to make way for the new Triborough Bridge. Some years ago an amendment to the state mental hygiene law laid responsibility for care of mental defectives on the state, but because of inadequate facilities transfers from the city institution had to be made gradually. Since the old hospital was torn down, some of its inmates have been moved from place to place until the final group was taken over recently. The mental hygiene clinics at Bellevue and Kings County hospitals will function as application bureaus

for the state institutions. Admission of mental defectives from New York City to state institutions has averaged about 700 a year for the past five years, according to the department of hospitals.

Typhoid on German Ocean Liner.—Twenty-four members of a crew of 400 were suffering from typhoid when the Hamburg-American liner *Hansa* arrived in New York August 28 with 993 passengers. Within a few hours the number of sick had increased to twenty-nine. The ship was cleared at quarantine by the new system of radio pratique under which the ship's physician radios his belief that no quarantinable disease exists on board. It was thought that the men were suffering from a form of gas poisoning from fumigants used before the vessel sailed from Hamburg, according to a statement from the steamship company. Investigation by the U. S. Public Health Service officials at quarantine and by the New York City Health Department proved that the disease was typhoid. As a result the steamship officials canceled the entire passenger list of 325 persons and returned to Germany with the sick members of the crew, an extra physician and a corps of nurses. Meanwhile the city health department conducted an investigation of the passengers who arrived on the *Hansa*. Those who lived in New York would be visited by physicians of the department to watch for indications of the disease, and health departments of other cities represented by the passenger list were to be notified, it was said. Before the *Hansa* left on its return trip the fresh water tanks were emptied and refilled and the water was then tested by the city laboratories. According to the New York *Times*, the public health service officials removed the ship's physician, Dr. Helmuth Paul Otto Grieshaber, from the list of physicians eligible for medical clearance by radio and the *Hansa* will henceforth be required to stop at quarantine for examination.

OREGON

Associate Dean Appointed.—Dr. David W. E. Baird Jr., assistant clinical professor of medicine, University of Oregon School of Medicine, Portland, has been appointed associate dean to succeed the late Dr. Harold B. Myers. Dr. Baird graduated at Oregon in 1926.

PENNSYLVANIA

Deaver Road.—A street in Wyncote has recently been named Deaver Road in honor of the late Dr. John B. Deaver, Philadelphia. The street was formerly known as Wyncote Road.

District Meeting.—The annual meeting of the Ninth Councilor District was held in Indiana, August 26. On the scientific program were the following speakers: Drs. Ford M. Summerville, Oil City, on "Gallbladder Infections with Reference to the Pancreas and Heart"; Hollister W. Lyon, Punxsutawney, "Diagnosis and Treatment of Chronic Prostatism," and William J. Armstrong, Butler, "Meningitis—Differential Diagnosis and Treatment." Drs. Frederick M. Jacob and Chauncey L. Palmer, Pittsburgh, chairmen respectively of the committees on public relations and public health legislation in the Medical Society of the State of Pennsylvania, discussed activities and plans of their committees.

Philadelphia

Personal.—Dr. Anthony Sindoni Jr. has been appointed chief of the diseases of metabolism at the Philadelphia General Hospital.——Merkel Henry Jacobs, Ph.D., professor of general physiology at the University of Pennsylvania and director of the Marine Biological Laboratory at Woods Hole, Mass., has resigned from the latter position, according to *Science*.

TEXAS

Personal.—Dr. Levi C. Wayland, Plainview, has been appointed health officer of Hale County, to succeed the late Dr. Edgar F. McClendon.——Dr. George M. Decherd, Austin, was recently appointed health officer of Austin to succeed Dr. Eugene O. Chimene, who resigned.

Society News.—Drs. Julius McIver and William H. Potts Jr. will address the Dallas County Medical Society, September 23, on "Analgesia in Obstetrics" and "Recent Advances in Our Knowledge of the Vitamins" respectively.——The annual meeting of the Texas Public Health Association will be held in Dallas at the Hotel Adolphus, November 1-3. Sessions the first two days will be for laboratory workers, food and drug officials, health officers, public health nurses and sanitarians. The third day's program will be open to the general public. ——Drs. Walter G. Reddick and William Lee Hudson, Dallas, addressed the Kaufman County Medical Society, Terrell, June 8, on "Types of Heart Failure and Their Treatment" and "Congenital Duodenal Bands" respectively.——Dr. Roy G. Loveless, Slaton, addressed the Lubbock-Crosby Counties Medical Society, Lubbock, July 6, on eclampsia.

WISCONSIN

State Medical Meeting at Milwaukee, September 15.—The ninety-sixth annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee September 15-17 at the Milwaukee Auditorium. Headquarters will be at the Hotel Schroeder. Guest speakers who will address general sessions will be:

Dr. Ralph A. Kinsella, St. Louis, Principles Governing Treatment of Severe Streptococcic Infections.
Dr. Eldridge L. Eliason, Philadelphia, Surgical Aspects of Indigestion.
Dr. Chevalier Jackson, Philadelphia, Indications for Bronchoscopy.
Dr. Emery A. Rovenstine, New York, Anesthesia.
Dr. Cyrus C. Sturgis, Ann Arbor, Mich., Modern Methods of Treating Lobar Pneumonia.
Dr. Fredrick A. Willius, Rochester, Minn., Treatment of Diseases of the Heart.
Dr. Charles A. Aldrich, Winnetka, Ill., Growth and Development of Babies.
Dr. Edward L. Cornell, Chicago, Abnormal Vaginal Discharges.
Dr. Vincent J. O'Conor, Chicago, Stone Impacted in the Lower Ureter.
Dr. William C. Menninger, Topeka, the Rogers Memorial Lecture, Psychological Factors in Medical and Surgical Conditions.
Dr. Robert M. Grier, Evanston, Ill., Pain Relief in Labor.
Dr. Edward T. Evans, Minneapolis, The History and Application of New Advances in the Treatment of Fracture of the Neck of the Femur.
Dr. John H. J. Upham, Columbus, Ohio, President, American Medical Association, The Heart of Middle Life.

One general session will be devoted to a symposium on "The Family Physician—A Unit in Preventive Medicine," in which the speakers will be Drs. Frederick C. Rodda, Minneapolis; Jay Arthur Myers, Minneapolis, and Fred G. Johnson, Iron River. At another session there will be a symposium on endocrinology presented by Drs. Edward H. Rynearson, Rochester, Minn., and Elmer L. Sevringhaus, Madison. Several of the guest speakers already named will also address section meetings and participate in round table luncheon discussions. In addition, the following will address various sections:

Dr. Owen H. Wangensteen, Minneapolis, The Rôle of the Surgeon in the Treatment of Acute Pyogenic Infections.
Dr. Cecil S. O'Brien, Iowa City, Conjunctivitis: Diagnosis, Etiology and Treatment.
Dr. Paul H. Garvey, Rochester, N. Y., subject to be announced.

Dr. Logan Clendening, Kansas City, Mo., will be the speaker at the annual dinner at the Hotel Schroeder, Thursday evening, on "The Great Centers of Medical Thought in the Past." A new feature of the meeting is a "health exhibit," prepared by the council on scientific work for inspection by the public.

GENERAL

Western Ophthalmological Meeting.—The fourth annual meeting of the Western Ophthalmological Society was held in Denver, July 22-23, with the following speakers, among others:

Dr. Roderic P. O'Connor, San Francisco, Principles of Ocular Surgery.
Dr. Edwin M. Neher, Salt Lake City, Utah, presidential address, Aniridia in Five Generations.
Dr. Maurice E. Marcove, Denver, Origin and Significance of Disjunction Bands in the Crystalline Lens.
Dr. Georgiana M. Dvorak Theobald, Oak Park, Ill., Radium in Treatment of Chalazion.
Dr. Edward Jackson, Denver, Mechanics of Cataract Extraction.

At an evening session July 22 the speakers included Dr. Edward H. Cary, Dallas, Texas, on "Did Clinical Specialization Anticipate Scientific Medicine?"

Prevalence of Infantile Paralysis.—The U. S. Public Health Service reported that 492 cases of infantile paralysis had been reported during the week ended August 21, compared with 455 the preceding week and an average of 303 for this season, according to the New York *Times*.——Three deaths have occurred in Buffalo, where eighteen cases have been reported since August 14.——Newspapers report that Illinois and Chicago have the largest number of cases at any time in twenty years, 221 cases in the state this year, compared with ninety-five for the corresponding period of 1936 and sixty-eight in Chicago from August 1 to 22, compared with ten in the same period of 1936.——Opening of schools was delayed a week in Omaha because of sixty-three cases from May 1 to August 24.——A general quarantine of children under 16 was imposed in Mansfield, Ohio, August 17, following the death of a young woman playground supervisor.——Twenty-four cases have recently been reported in Kansas City, Mo., and five in Jackson County outside Kansas City.

Southern Tuberculosis Meeting.—The annual meeting of the Southern Tuberculosis Conference and the Southern Sanatorium Association will be held at the John Marshall Hotel,

Richmond, Va., September 29-October 1. Among the features of the program will be a symposium on collapse therapy, with the following speakers: Drs. Richard H. Overholt, Boston; Frank S. Johns, Richmond; Paul A. Turner, Louisville, Ky., and Champneys H. Holmes, Atlanta, Ga. Speakers in a symposium on nontuberculous lung conditions will be Drs. Louis Hamman, Baltimore; Leroy U. Gardner, Saranac Lake, N. Y., and David T. Smith, Durham, N. C. Dr. Overholt, Dr. Jay Arthur Myers, Minneapolis, president of the National Tuberculosis Association, and Dr. Edward J. Murray, Lexington, Ky., president of the Southern conference, will speak at a public session Wednesday evening September 29. Dr. Myers and Dr. John Donnelly, Charlotte, N. C., president of the sanatorium association, will be the speakers at a banquet Thursday evening.

Deduction of Medical Expenses for Federal Income Tax Purposes.—On the last day of the first session of the Seventy-Fifth Congress, Senator Bone of the state of Washington introduced in the Senate a bill, S. 2997, proposing, in part, to authorize individuals to deduct, in the computation of their federal income taxes (1) any amounts, not exceeding $250, actually paid during the taxable year for medical, dental, surgical or nursing treatment, or hospitalization of the taxpayer or his spouse or of any dependent for whom a credit is allowed under the income tax law; and (2) amounts paid during the taxable year for the funeral and burial of a taxpayer's spouse, or a dependent for whom a credit is allowed under the law, with a proviso that no such deduction shall be allowable if at the time of the filing of the return the expense has been claimed as a deduction for estate-tax purposes. While this bill was introduced too late for any action to have been taken with respect to it before the adjournment of the Congress, it was referred to the Senate Committee on Finance and consideration may be given to it when the second session of the Congress meets either in special session or on Jan. 3, 1938.

American Hospital Association.—The thirty-ninth annual convention of the American Hospital Association will be held in Atlantic City, September 13-17. There will be general sessions, section meetings on group hospitalization, dietetics, tuberculosis hospitals, outpatient service, trustees' activities, children's hospitals, nursing, construction, social service, mechanical division of hospital operation, purchasing agents, administration and public hospitals. Among the speakers listed on the program are:

Dr. Gilbert J. Dalldorf, Valhalla, N. Y., Incorporation of Modern Knowledge of Nutrition into Institution Dietetics.
Dr. Carl M. Peterson, hospital inspector, American Medical Association, Chicago, Intern Training in the Small Hospital and Discussion of the Relationship of the Medical Specialty Boards to the Small Hospital.
Dr. Robert E. Plunkett, Albany, N. Y., Sanatorium and Tuberculosis Hospital Survey of the American Medical Association.
Dr. Samuel W. Becker, Chicago, The Place of the Social Worker in the Medical Team.
Dr. Benjamin P. Potter, Secaucus, N. J., Present-Day Concepts of a Tuberculosis Hospital.
Dr. Arthur W. Bingham, East Orange, N. J., The Rôle of the Hospital in Reducing Maternal Mortality.
Drs. Charles P. Major and Theodore S. Wilder, Philadelphia, Ultraviolet Light for Air Sterilization in a Ward for Infants.
Drs. Mary K. Bazemore, Merion Station, Pa., and William M. McFadden Jr., Philadelphia, Prevention of Ward Infections in Children's Hospitals.
Dr. Carl F. Vohs, St. Louis, Group Hospitalization from the Medical Man's Point of View.
Dr. Joseph W. Mountin, U. S. Public Health Service, Washington, D. C., Financial Support of Nongovernment Hospitals, as Revealed by the Recent Federal Business Census of Hospitals.

A feature of the meeting will be "clinical demonstrations" of such procedures as isolation hospital technic, superintendent's staff conference, court appearances, technic of obtaining consent for necropsy and fire protection.

International Radiology Congress in Chicago, September 13.—The fifth International Congress of Radiology will be held in Chicago at the Palmer House, September 13-17. Preliminary to the congress there will be a reception to foreign guests, given by the Chicago Roentgen Society Sunday afternoon, September 12, at the Palmer House, followed by group dinners. Monday will be devoted to meetings of the international executive committee and the international radiological committee, an official luncheon for officers, directors, delegates and committees of the congress, and the official opening of the technical and scientific exhibits.

The opening session will be held Monday evening. Dr. Arthur C. Christie, Washington, D. C., will be installed as president of the congress by Dr. Hans R. Schinz, Zurich, Switzerland, president of the fourth international congress. Addresses will be delivered by Drs. William J. Mayo, Rochester, Minn.; C. Gösta Abraham Forssell, Stockholm, Sweden; Schinz and Christie.

Each morning from 8 to 9 o'clock lecture courses will be offered with the following instructors:

Dr. Henri Coutard, Paris, Roentgen Therapy in Cancer.
Dr. George W. Holmes, Boston, Problems in Roentgenologic Diagnosis.
Dr. Hermann Holthusen, Hamburg, Germany, Fundamentals of Roentgen and Radium Therapy.
Dr. Byrl R. Kirklin, Rochester, Minn., Roentgen Diagnosis in Gastro-Enterology.
Dr. Edwin A. Merritt, Washington, D. C., Special Problems of Radiation Therapy Relating Particularly to Treatment of Cancer of the Cervix and Cancer of the Breast.
Dr. Merrill C. Sosman, Boston, Diagnosis of Brain Lesions.
James L. Weatherwax, Philadelphia, Elementary Physics of Radiation.

These courses will be given in English and will be open to physicians other than radiologists for a small fee.

General sessions will be held each morning. Among the speakers will be:

Dr. Forssell, The Rôle of the Autonomous Movements of the Gastro-Intestinal Mucous Membrane in Digestion.
Dr. Gian G. Palmieri, Bologna, Italy, Radiologic Evaluation of the Size and Form of the Heart.
Dr. Arthur Schüller, Vienna, Cerebral Cystography and Cisternography.
Dr. René Gilbert, Geneva, Switzerland, Treatment of Hodgkin's Disease by Radiotherapy.
Sir George Lenthal Cheatle, London, and Dr. Max Cutler, Chicago, Racial Variations in the Incidence of Carcinoma.
Dr. Russell J. Reynolds, London, Cineradiography by the Indirect Method.
William D. Coolidge, Ph.D., Schenectady, N. Y., Production of X-Rays of Very Short Wavelength.
Robert J. Van de Graaff, Ph.D., Cambridge, Mass., Production of Penetrating Radiations by Means of Electrostatic Generators.
Dr. Yser-Solomon, Paris, France, Recording the Quantity of Irradiation in Roentgen and Radium Therapy in R Units.

Afternoon sessions will be divided into sections. Three are on roentgen diagnosis with Drs. James T. Case, Chicago, Charles A. Waters, Baltimore, and Frederick M. Hodges, Richmond, Va., as chairmen. Three are on radiotherapy, with the following chairmen: Drs. Albert Soiland, Los Angeles; Bernard P. Widmann, Philadelphia, and Arthur U. Desjardins, Rochester, Minn. Gioacchino Failla, D.Sc., New York, will be chairman of the section on radiophysics; Dr. Francis Carter Wood, New York, of the section on radiobiology, and Dr. Norman E. Titus, New York, the section on electrology and light therapy.

The national organizations in radiology in the United States will sponsor meetings for the evenings of the congress. The American College of Radiology will have a dinner and convocation Monday evening before the opening general session. Tuesday evening the American Radium Society will present the Janeway Lecture, to be delivered by Dr. Douglas Quick, New York, on "Carcinoma of the Larynx." Wednesday evening Dr. George E. Pfahler, Philadelphia, will give the Caldwell Lecture of the American Roentgen Ray Society, on "Treatment of Carcinoma of the Breast." The Radiological Society of North America will sponsor the program for Thursday evening, presenting the Carman Lecture, by Dr. George W. Holmes, Boston, on "The Development of Postgraduate Teaching in Radiology." Friday evening there will be a banquet for the entire congress, with entertainment.

A feature of the congress will be the simultaneous projection of pictures and text of all papers on screens in English, French and German.

In addition to Dr. Christie, officers of the congress include Dr. Benjamin H. Orndoff, Chicago, general secretary; Drs. George E. Pfahler, Philadelphia, and James Ewing, New York, and William D. Coolidge, Ph.D., Schenectady, honorary vice presidents. Information concerning the congress may be obtained from Dr. Orndoff, 2561 North Clark Street, Chicago, telephone Lincoln 0724.

CANADA

Poliomyelitis in Ontario.—Between 350 and 400 cases of poliomyelitis have been reported in an epidemic in Ontario within the past three weeks, it was reported August 29. Two thirds of the cases and nine deaths of twenty reported for the whole province have been in Toronto and the surrounding district. It was announced August 23 that schools would not reopen until September 7, instead of September 1.

CORRECTION

Bismuth Subsalicylate for Flat Warts.—In Queries and Minor Notes in THE JOURNAL, August 21, page 610, the dose of bismuth subsalicylate used in the treatment of flat warts by intramuscular injection was given as 1.5 Gm. and 2 Gm., which was an error. The dosage should have been indicated as the same amount in grains.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 6, 1937.

Nonvenereal Syphilis

At the Royal Society of Tropical Medicine, Dr. E. H. Hudson described a form of nonvenereal syphilis which is epidemic among the seminomad villagers of the middle Euphrates and is called bejel. Sexual promiscuity does not exist and the disease is usually acquired in childhood by contagion under the conditions in which a dirty, careless, poorly clad, closely huddled people live. Sixty per cent of adults acquire it in childhood and a majority of the remainder from children, often their own, later in life. Less than 1 per cent of adults acquire the disease in sexual intercourse. Of the adult population 75 per cent stated that they had had bejel, and that percentage gave positive serologic reactions. Surveys showed that 90 per cent were affected. That bejel is syphilis was shown by the early and late lesions, the uniform presence of an organism indistinguishable from Spirochaeta pallida, the positive precipitation and complement fixation reactions, and the response to treatment. Bejel resembles yaws in its nonvenereal acquisition in childhood, its community-wide dissemination, the morphology of the skin lesions, the predilection for the skin and bones, the relative escape of the eyes and the cardiovascular and nervous systems, and in the presence of gangosa, juxta-articular nodules and patchy depigmentations. Both diseases tend to disappear under civilizing influences. On the other hand, bejel resembles syphilis in its constant involvement of mucous membranes, in the alopecia, and in its extratropical location. It can be argued that the three forms of spirochetosis have an identical etiologic basis and that their differences can be explained on epidemiologic grounds if the influence of all environmental factors is known. Bejel is syphilis in its "lowest terms," the archetype of this spirochetosis. That syphilis has ceased to be a childhood disease and assumed a venereal character is not due to any tropism toward the genitalia but to the restriction of the bodily contact for its communication to sexual intercourse by the conditions of civilization. The existence of bejel is also strong proof of the identity of yaws and syphilis.

Persecuted Scientists and the Society for Their Protection

When the Academic Assistance Council was formed in 1933 to help the scientists and scholars expelled from their posts on the continent in consequence of political persecution, it was hoped that the need for such an organization would be only temporary. Unfortunately this hope has not been realized and in 1936 it was decided to continue the work of the council by means of a permanent body, the Society for the Protection of Science and Learning. The great body of the refugees come from Germany but political persecution on a much smaller scale is not unknown in some other countries—Austria, Russia, Italy, Spain and Portugal. Thus under our boasted civilization of the twentieth century it is only the smaller part of the European continent—the democratic countries of France, Netherlands, Scandinavia and Switzerland—that are free from this stain. In his book "Human History" the anatomist and anthropologist Sir Grafton Elliot Smith wrote: "For the first thirty centuries of its career civilization was concerned with building up the state system. Then in the fifth century B. C. the Ionians opened up a new chapter in human history by removing the shackles. They showed that man was free to think." When he wrote these words some years ago Elliot Smith could not have foreseen that he would live to see the day when he could have added the postscript: This achievement of the Greeks was lost over a large part of Europe in the twentieth century.

According to the last report of the Society for the Protection of Science and Learning the total number of scientists and scholars displaced from German universities is about 1,600, of whom 70 per cent were married. Of about 800 scientists and scholars who have left Germany 464 have been permanently reestablished and 311 temporarily placed. These have been distributed in forty-three countries, of which Great Britain, with 228, and the United States take the lead. The civil war in Spain has led to the displacement of sixty scholars, who may never be able to return to their country. The society maintains a central bureau in London. It makes emergency grants to those who have secured what may become permanent employment and allots a limited number of research fellowships to those of unusual ability. It has assisted those engaged in all branches of science, but the majority are workers in medicine, chemistry, physics and economics.

The Insufficient Consumption of Milk

The desirable amount of milk in the diet of children has been given as from 1 to 2 pints daily, for nursing mothers about 2 pints, and for adults about half a pint. Our national consumption is not half that amount. An organization called the Children's Minimum Council, of which our greatest authority on diet, Sir Frederick Gowland Hopkins, is chairman and which has the support of twenty-six national organizations concerned with maternity and child welfare, has submitted to the Ministry of Health a plan for the provision of cheap milk for mothers and children under school age. The council points out that at present prices the milk for a family of three children, a mother again pregnant and a father would cost about $3 a week—a usually impossible expenditure for a working class family. A survey was made of 587 working class households in Oxford not confined to the working class. In the families in which there were no children the weekly consumption of milk per head was 4.6 pints and the amount steadily diminished with the number of children until with six or more it became 1.85 pints. In Great Britain milk is much dearer than in any other country in northwestern Europe or in the United States. The council proposes that milk should be purchasable at 3 cents a pint for all expectant and nursing mothers and children of school age. At present it costs about 6 cents a pint, though it is sold at 11 cents a gallon for manufacturing purposes. The difference is partly due to the fact that the milk industry is a monopoly and prices are controlled by the Milk Marketing Board, a body appointed by the government. It is argued that some of this cheap milk should be diverted for the needs of mothers and children. This would involve a subsidy by the government.

Homosexuality and Divorce

In the House of Lords Lord Dawson (president of the Royal College of Surgeons) moved an amendment to the marriage bill providing that a divorce might be granted on the ground that since the marriage the respondent had been guilty of homosexuality. He said that homosexuality was now looked on as a pathologic condition. He was not at all sure that in the future it might not be regarded as a deficiency disease, and although it was true that the law must take cognizance of homosexuality and punish it in order to act as a preventive to potential offenders, the more reasonable view was being adopted gradually that it had, at any rate, one foot in the realm of disease and was not wholly in the realm of crime. For the purposes of the bill it would be entirely wrong to use any word that would confine homosexuality to one sex. It was time that there was equality of treatment between men and women. This offense was quite compatible with excellent qualities of mind and character. But such people would frustrate the purpose for which marriage existed and it would be a grave injustice to recognize any marriage in which homosexuality turned out to be existent in either one of the parties. When discovered, it ought to be a ground for divorce. The amendment was opposed by Lord

Atkin (lawyer). He did not think that these cases were of the nature of disease. In his experience they were the result of wicked impulses which were susceptible of being controlled. They did not appear to him to be of the nature of a permanent infirmity that was always likely to affect the married life. The real answer probably at the present moment was that the subject required careful examination. The amendment was defeated.

$18,000 Damages Assessed for Puerperal Fever

A woman was admitted to a cottage hospital for her confinement. After the birth of the child she was removed from the maternity ward to the general ward. There she contracted puerperal fever from a woman who was found later to be suffering from this disease. She brought an action for negligence against the hospital and the physician who attended her there. In giving judgment Mr. Justice Singleton said that the plaintiff was perfectly well when she entered the hospital and that one of its rules was that no infectious case was to be kept there. The hospital authorities ought to have known that the hospital was dangerous, but no warning was given to the plaintiff. They failed in their duty when they placed her in a ward with a gravely suspicious case. The physician was not responsible for her admission, but he had in the hospital a gravely suspicious case. He ought to have isolated it in order to prevent the infection from spreading. When he found that the plaintiff had been put in the same ward as that case he ought to have removed her and done everything to prevent her becoming infected. He did nothing. He did not protest to the matron nor did he give any warning of the danger of infection. In that respect he failed in his duty to the plaintiff. She was now crippled in the hips, one shoulder and one wrist. No damages could compensate her for the pain and suffering which she had undergone. The judge awarded $18,000 damages against the hospital and the physician.

PARIS

(From Our Regular Correspondent)

Aug. 7, 1937.

Osteopsathyrosis as a Familial Disorder

The symptom triad bluish color of the sclerae, bone fragility in infancy and deafness, as first described by Lobstein, in its familial and hereditary aspects, was the subject of a paper presented at the June 8 meeting of the Académie de Paris by Carrière, Delannoy and Huriez. They reported the results of the study of five families, in which thirty-four of eighty-six members presented symptoms of osteopsathyrosis over a period of five generations. The disease is distinctly hereditary and is directly transmitted on both the paternal and maternal sides, attacking both boys and girls. It does not follow the mendelian laws. The principal clinical feature is the bluish color of the sclerae, being found in thirty-three of the thirty-four cases. In order, however, to make a diagnosis of osteopsathyrosis, the color ought to attain a certain intensity, present a familial character and be associated in at least one member of the family with osseous or auditory stigmas. Although the bone fragility is the clinical feature which most often directs attention to the presence of the syndrome, it is inconstant. Only seven patients had spontaneous fractures. In two of the families that were studied, such an occurrence was never found by the authors. The term "glass man," as exemplified by the multiplicity of the fractures, was applicable to only five cases. The possibility of fractures of the spine subsequent to slight injury has not been sufficiently taken into consideration by clinicians. Bone deformity, especially of the skull, is frequent, without any history of injury. Kyphoscoliosis was found in five cases. In general, bone development is inadequate and such a degree of looseness of the joints as to be followed by dislocations and sprains was noted in seven cases. Endocrine dysfunction was observed in all the families. It has been claimed that a hypoparathyroidism is responsible for this syndrome, but the authors found that the calcium content of the blood was usually higher than normal, especially in patients with a history of recent fractures. Hypoparathyroid grafts, according to Hansen, have not been followed by any improvement and the injection of parathyroid extract has resulted in an exaggeration of the symptoms. Parathyroidectomy was performed in two severe cases. So far, the blood calcium content has been lowered, but it is too early to evaluate the end results. Stigmas of hereditary syphilis are frequently found; hence antisyphilitic treatment should be given as a routine measure. It may not have much effect on an outspoken syndrome, but it acts favorably on future generations.

Diagnosis of Hydatidiform Mole

At a meeting of the Académie de médecine, Brindeau and Hinglais of Paris presented a paper in which their method of diagnosis of the early stages of malignant deciduoma, i. e., the fifth week after the miscarriage, was described. It depends on the content of gonadotropic substance in the blood serum. The normal varies from 1,000 to 15,000 units per thousand cubic centimeters of serum. During the development of a hydatidiform mole, as well as in pernicious vomiting of pregnancy, it rises to 100,000 units or even higher. A curve was shown representing the progressive diminution of the content of gonadotropic substance in an uncomplicated case of miscarriage due to hydatidiform mole. A second curve was shown to illustrate the value of the Brindeau-Hinglais method. The curve dropped to 2,000 units the tenth day after the miscarriage and remained at this point until the thirty-third day. The curve then showed a sharp rise on the thirty-fifth day to more than 200,000 units, indicating acute malignant changes. The diagnosis was verified, following hysterectomy, and the curve approached the normal ten days after the operation. Seventy-two cases of miscarriage due to hydatidiform mole were observed at the Tarnier clinic. Tests at frequent intervals by this method resulted in early diagnosis, followed by hysterectomy, in eight of the seventy-two cases.

Causes of Regional Variations of Natality

At the June 8 meeting of the Académie de médecine, Dr. Godlewski said that the natality rate is highest in communities whose population does not vary as the result of influx of foreigners or emigration of the members of the older families. Hence the natality rate does not change in the mountainous portions of France. The number of births among those who have come from foreign countries since the war has been disappointing. Denatality is more or less generalized here, and the few centers of surnatality do not compensate for the decrease in number of births. Concomitant with the steady migration from smaller to larger centers of population, a drop in the natality rate has been noted, especially since the crisis. The chief causes of the denatality are the widespread use of contraceptive measures and the increasing number of abortions, which together are responsible in some regions for a 25 per cent decrease in the natality rate. Tuberculosis in young girls and venereal diseases, especially gonorrhea, play a secondary part. Fortunately, the struggle against infant mortality has partially offset the denatality. To combat the latter it has been proposed that financial aid should be given to every family head and a diminution of the inheritance taxes, which at present are high in France. In the discussion, Dr. Sireday stated that the leniency shown by both judges and juries toward professional abortionists was a great handicap to the question of having a larger number of births in France.

Death of the Ophthalmologist Felix de Lapersonne

One of the leading French ophthalmologists, Prof. Felix de Lapersonne, has died here at the age of 84. He succeeded Professor Panas as head of this department in 1901 at the Faculté de médecine. His clinics became popular and many

foreign specialists admired his teaching methods. During the World War he took charge of the ophthalmologic service and organized centers all over France. He was elected a fellow of the Academy of Medicine shortly after the close of the war and became its president in 1931. As one of the editorial board of the *Presse médicale*, the weekly journal with the largest circulation in France, his service in keeping up the high standard of this publication was an important contribution to medical journalism. As head of the ophthalmologic clinic of one of the largest Paris hospitals, his influence on the progress of this specialty in the training of younger men has been extensive.

French ophthalmology loses its most distinguished representative in the death of Professor de Lapersonne.

BERLIN

(From Our Regular Correspondent)

July 26, 1937.

Congress of Otorhinolaryngologists

This year's Congress of German Otorhinolaryngologists met at Cassel. The main topic was "Suppurations of the Pyramidal Cells." Prof. Otto Mayer of Vienna delivered the principal lecture. In recent years, he said, scientists of all lands have given more consideration to suppurations of the pyramidal cells. These disturbances, it has been determined, can be responsible for many intracranial complications. In some cases after a thoroughgoing removal of the mastoid cells (mastoidectomy) the surgeon believes that the focus of infection has been completely done away with until he is confronted with a manifestation of these sequels. In cases that terminated fatally despite a carefully performed operation, microscopic postmortem examination of the pars petrosa of the temporal bone disclosed foci of inflammation in the areas anterior to the semicircular canal, and because of the location of these foci they had not come within the scope of the intervention. A study of pyramidal cell suppuration is of especial importance, as most of the present day fatal cases of meningitis following acute otitis media are based on purulent foci in the pars petrosa. The pyramidal apex syndrome as a clinical sign of the disorder was established by Gradenigo in 1904. This syndrome is characterized by an acute otitis media followed by violent temporoparietal pain and abductor paralysis on the affected side. Investigation of the way in which the inflammation reaches the pyramidal apexes from the middle ear discloses the principal etiologic factor as a more or less pronounced pneumatization of the pars petrosa. Various types of pneumatization may be differentiated. All cell tracks can lead to the apexes. The following should be kept in mind with respect to pyramid cell suppuration: It may form a circumscribed focus, spread over the entire surface of the labyrinth or lead to an abscess, which may be either closed and hence incapable of discharging into the spaces of the middle ear or open to the extent that some influx of pus into the middle ear is possible. Abscesses may also occur in various cell tracks and, finally, pyramidal cell infection may assume the character of a proliferating inflammation and run its course without much suppuration. But if the suppurative process is sufficiently active it can perforate the posterior or middle cranial fossa, the labyrinth, the carotid canal, the foramen lecerum posterius or the pharynx. It is essentially a more favorable sign if perforation takes place in the last named region, forming a retropharyngeal abscess. X-ray visualization is a valuable diagnostic aid. Operative treatment is usually indicated. Cases that come early to diagnosis are treated conservatively (by paracentesis), since in these cases the prognosis is favorable. Even cases in which the suppuration is of long standing may be cured; mastoidectomy with a thoroughgoing extirpation of the cells and above all those proximate to the labyrinth is here indicated. If suppuration persists, radical operation should follow. Only if the foregoing safe and tried procedures fail to produce results should one look for a focus in the apexes.

Professor Zange of Jena has found that pyramid cell suppuration and related processes which appear in the region of the inner ear, in the pars petrosa or in the adjacent meningeal spaces are capable of involving numerous other cerebral nerves. Most prominent among these nervous diseases are labyrinthine-vestibular disorders, namely, disturbances of the equilibrium, which, because of their peculiar character and the preservation of peripheral irritability of the labyrinth, can today be with certitude distinguished from labyrinthine inflammations.

Some other data of interest were contributed in the discussion. Report was made of the healing of a pyramidal abscess that had erupted spontaneously into the sphenoidal sinus. Similar conditions may also heal spontaneously, especially in child patients. But, on the other hand, there are the hopeless cases, especially the rapidly advancing osteomyelites. The latter are particularly apt to prove fatal if combined with the otitis of nurslings.

The Treatment of Epidemic Meningitis

Professor Bessau, ordinarius in pediatrics at Berlin, recently discussed epidemic cerebrospinal meningitis before the Berlin Society of Pediatrics. In recent years a slight increase in the incidence has been remarked. Diagnosis is established by lumbar puncture. As to therapy, antimeningococcus serum has been unsatisfactory. On the other hand it has been noted that exanthems, as in measles, for example, exert a favorable effect on meningitis. The serum exanthem appears likewise to exert a favorable effect on the course of the disease. Bessau treated three children with antimeningococcus serum and then induced a serum sickness by means of diphtheria sheep serum. Two of the children died; the third survived with an optic atrophy. Four children were inoculated with sheep serum alone from two to three times. A definite serum sickness was thus induced in all four patients. The effect was extremely favorable. Improvement was observed before the appearance of the serum exanthem and allergic symptoms. In the case of a 5 months old nursling who had received 80 cc. of sheep serum in two days, a startling improvement appeared within five days, especially as evidenced in the cerebrospinal fluid. One case in which recidivation had followed the beginning of improvement came to prompt recovery after intramuscular administration of prontosil. Another child was treated with immunized blood; this blood was abstracted from the patient's father, who had been immunized with the meningococcus strain of the sick child. Bessau believes that the use of specific serum should be abandoned in favor of the artificial production of an exanthem by means of sheep serum.

Care of Nurslings and Infants

Not long ago the national minister of the interior issued regulations designed to effect more satisfactory cooperation between the health officers of particular districts and cities and the National Socialistic bureau of public welfare. The new rules stipulate that health supervision and medical advice for mothers, nurslings and young children must be regarded as a principal function of the public consultative centers maintained by local health departments. The National Socialistic public welfare bureau is to expand the work of its consultation centers within the framework of the already extant "Mother and Child" Auxiliary by a program of dietary and economic assistance. It is thought that these guiding principles will establish a suitable foundation for collaboration of the party bureau and the local boards in the fight against infant mortality. As a result, welfare work among mothers and children should become more fully standardized in all parts of the country. In carrying forward this large scale program of infant welfare the local

health bureaus will make use of the existing welfare and consultation centers maintained by the central party bureau. A comprehensive, finely meshed network of consultation centers is being evolved so that in the future no mother will forego necessary visits to the physician because of too great distances between the consulting center and her home. If need arises, traveling medical consultative centers will be organized.

SWITZERLAND

(From Our Regular Correspondent)

July 15, 1937.

Fertility of Parents of the Feebleminded

Dr. C. Brugger has undertaken an investigation of the interrelation of hereditary endowment and fertility. He was especially anxious to apply the German criteria to a nation whose cultural, social and economic complexion differed from that of the reich. The survey material consisted of the families of (1) 611 students in the realgymnasiums, namely, secondary schools offering generalized academic courses, (2) 758 pupils in the common schools and (3) 429 congenitally feebleminded pupils of the special schools for backward children, all at Basel. Any pupil whose intelligence quotient was below 0.85 was classed as feebleminded. All feeblemindedness was considered as inherited if no proof of an exogenic production of the deficiency could be adduced. The statistical material dealt only with legitimate offspring and with families in which the eldest child had been born prior to 1926; that is, families which represented a marriage that had already endured for ten years. The children were grouped according to the year of birth: group 1 comprised all children born prior to 1911, group 2 all those born in the years from 1911 to 1920 and group 3 those born between 1921 and 1925. On this basis no further offspring could be expected from the parents of group 1 and only a few additional offspring might be anticipated from the parents of group 2. The accompanying table indicates the average number of children born to each married couple studied.

Average Number of Children Born to Each Couple Studied

Group	Real-gymnasium Students	Common School Students	Combined	Feeble-minded
1.....	3.2	3.4	3.3	5.7
2.....	2.1	2.2	2.2	3.2
3.....	1.7	1.7	1.7	2.3

With regard to the occupation of the parents, merchants and manufacturers were most prominent (19.9 per cent) among the parents of realgymnasium students. Other callings were represented in fairly equal numbers among this parent group excepting that only 0.3 per cent were of the working class. In the parentage of group 2 (the common school students), various social classes were represented as follows: artisans 45.2 per cent, laborers 14.9, minor civil servants 14.5. The parents of the feebleminded pupils were found to be in great measure of the employed artisan class (46.9 per cent) and of the unskilled laborer class (41.1 per cent). The representation of the minor civil servant class (4.6 per cent) and of the commercial "white collar" class (4.4 per cent) was much smaller and that of the independent artisans and tradespeople (2.9 per cent) even less. A further classification revealed that the differences in the number of offspring in particular social strata are much fewer than differences between the parents of normal and feebleminded children within the same class of society. Brugger came to the conclusion that it is not the social milieu but the quality of hereditary endowment that is the decisive element in the restriction or lack of restriction of the number of offspring by a married pair.

International Congress of the Therapeutic Union

The Union Thérapeutique, founded in Paris in 1934, held its first international congress at Berne recently under the presidency of Prof. Emil Bürgi, pharmacologist of Berne. Dr. Toni Gordonoff served as secretary general. More than 400 physicians from many different countries were present. The congress was officially opened by Federal Councillor Etter on behalf of the Swiss government. Hans Horst Meyer of Vienna sent a message on "Experimentation and the Clinic," which was read by his pupil and successor E. P. Pick. Gustav von Bergmann, Berlin clinician, discussed the pathology of arteriosclerosis and Laubry of Paris read a comprehensive discussion on treatment. Max Bürger of Bonn discussed senile alterations of the aorta, and Leriche, Strasbourg surgeon, reported his investigations of surgical treatment of vascular disorders. Walther Frey, Berne clinician, discussed chemical regeneration of tissues. These exchanges of opinion amply demonstrated the need for more frequent authoritative discussions of the arteriosclerosis problem. P. Martini of Bonn, in a paper on clinical studies of the therapy of hypertonia, furnished several illustrations of the prevalent attitude of reserved judgment toward much that is published with respect to vascular therapeutics. He pointed out that, if hypertension is subjected to a course of therapy from which medication with many numerous and much touted specifics is omitted but which in every other respect is correct and purposeful, the disorder will subside in the same way, within the same period of time and in equal measure as when the so-called specifics are employed. Handovsky and Goormaghtigh, both of Ghent, discussed the interesting interrelation of the thyroid body, arteriosclerosis and vitamin D.

Highly informative was the discussion of narcosis. De Quervain, the Berne surgeon, introduced this topic in a lecture which weighed the old against the new in a circumspect and helpful manner. Bouckaert of Ghent exhibited a film on the revivification of the higher centers following acute anemia. Wildbolz of Berne spoke on the operative treatment of prostatic hypertrophy. Bickel of Geneva spoke on the rôle of the hormones in cardiovascular therapy. Guggisberg of Berne discussed the importance of endocrine preparations, calcium and vitamin C for the medicinal therapy of functional uterine hemorrhages. Asher of Berne reported recent experiments on the pharmacodynamics of the resistance of the central nervous system to lack of oxygen. Paul Wolff of Geneva spoke on the problems of narcotism with particular reference to codeine. The program and the excellent organization caused the participants to feel that the congress had been a complete success.

Lausanne University's Jubilee

In June Lausanne University celebrated its quadricentennial. The institution traces its origin to the Akademie founded by the Bernese in the year 1537. The government of Berne which introduced the Protestant Reformation to this region envisaged a school at Lausanne wherein the promulgators of the new doctrine would receive training. During the nineteenth century the Akademie underwent a particularly drastic reorganization. Lausanne University maintains many international contacts. It is much beloved by students from Germanic Switzerland. The medical faculty is excellent. It boasts many illustrious names among its membership.

Prof. Eugen Bleuler 80 Years Old

Prof. Eugen Bleuler, former professor of psychiatry at Zurich University, recently completed his eightieth year. Especially by means of that research which found expression in his monograph (1911) on the group of disorders first designated by him the schizophrenias, Bleuler has stimulated psychiatric research and practice the world over. His textbook of psychiatry is widely used and has appeared in many editions since 1916. Bleuler is a leading representative of the so-called psychologic

trend in the treatment of mental disease, a movement which has furthered the understanding of previously incomprehensible psychic manifestations and evolved a systematized psychotherapy of the mental patient. Like his equally illustrious predecessor at Zurich, Auguste Forel, Bleuler has sought to serve medical science as a whole. In this connection his book "Autistic-Undisciplined Thought in Medicine" (1911) deserves particular mention, as this work exerted an enormous influence on the philosophy of the trained physician.

The Campaign Against Infant Morbidity and Mortality in Switzerland

The accompanying table indicates the decline in infant mortality in Switzerland. In spite of the great increase in population, child mortality has fallen to one fifth of what it was in 1876. Welfare services for both healthy and sick children have been extensively organized in recent decades. In Switzerland such service is administered by the cantonal governments. The canton of Vaud, for example, of which Lausanne is the capital, expends yearly more than 2,500,000 Swiss francs for child and infant welfare services. Thus, in a population of approximately 332,000 there is a per capita expenditure of 37 Swiss francs. The Lausanne Children's Clinic is beautifully situated on high ground 600 meters above the city and thus enjoys the most favorable climatic condition obtainable. To this model institution there has recently been added a spacious new ward for nurslings, the Nestlé-Saal, which is equipped with sixteen glass cubicles for isolation purposes. The clinic is under the direction of Prof. Jules Taillens.

Infant Mortality in Switzerland

Year	Deaths of Children Aged from 0 to 14 Years	Total Population (in Round Numbers)
1876	25,628	2,700,000
1890	19,327	3,000,000
1900	20,498	3,300,000
1910	14,920	3,750,000
1922	8,142	3,890,000
1934	5,044	4,100,000

The Inheritance of Endemic Goiter

Dr. J. Eugster of Zurich has investigated the problem of the heritability of endemic goiter by studying a small goiter-free district in comparison to regions in which the disease is endemic. Thorough investigation of family histories within the areas of endemic goiter and of persons emigrating from these areas, together with the research on 524 sets of twins, formed the basis for his investigations. He attaches special value to the significance of prolonged observations on individuals. It was established that in enzygotic twins the greatest variations in the course of the goiter appeared if discordant conditions had already been observed in this respect at birth, whereas in dizygotic twins the traits frequently consisted in various temporary manifestations of goiter by both twins of a pair.

The most important fact elicited by the investigation was that the difference between enzygotic and dizygotic twins lay within the limits of statistical error, given the same environmental surroundings. On the other hand, manifest concordance and manifest discordance followed in enzygotic and dizygotic twins with a ratio of 4 to 3. This observation had its foundation in the disparate conduct of dizygotic twins with respect to the localization and pathologic type of the goiter. Eugster concludes on the basis of his investigations that research on twins offers an additional proof of the great preponderance of environmental influence. Moreover, the results indicate that the usual question Is disease inheritable? should be modified to express the question of whether and to what extent heredity is a pathogenic factor. In endemic goiter a hereditary predisposition is not to be sought in a varied susceptibility within the same sex but is expressed both in the type of course assumed by the disease and in the localization and pathologic-anatomic form. A particular trait is not inherited but is rather an aggregate of reaction possibilities. The sexual predisposition at puberty may likewise be legitimately regarded as indirectly conditioned by heredity.

Prof. Otto Naegeli Has Retired

Prof. Otto Naegeli of Zurich University has retired because of ill health. Naegeli's activities are inseparably linked with the development of hematopathology and of constitutional studies. Hematologic diagnostic methods, leukemia and pseudoleukemia are but a few of the subjects that he has discussed in his numerous contributions to the literature. Prof. Wilhelm Löffler, erstwhile director of the medical policlinic, has been appointed to succeed Professor Naegeli.

Dr. Alfred Jaquet Is Dead

Dr. Alfred Jaquet, former professor of pharmacology, died at Basle, recently, at the age of 73. As a research scholar and as a man he had played a distinguished part within his special field and exerted influence far beyond the confines of his own university. Jaquet had received an excellent training in physiology and physiologic chemistry at Basle under Miescher and Bunge, and in pharmacology at Strasbourg under Schmiedeberg. While Jaquet was still an assistant to the last named, his discovery of a respiratory ferment in animal tissue was made, which came to be a point of departure for present day knowledge of cellular metabolism. Intensive study of the regulation of respiration in the blood led Jaquet to advance, among other things, the concept, generally applied today, of an "alkali reserve" in the blood. Further investigations undertaken with collaborators dealt with the physiologic effect of high altitudes. During his many years' service as assistant at the medical clinic, Jaquet obtained great insight into the interrelation of laboratory and clinic. An apparatus for the examination of the respiratory metabolism was invented by him and was known by his name. The metabolism of obesity, the relationship between muscular work and cardiac action, the physical therapy of circulatory disturbances are only a few of the numerous topics that have been investigated by Jaquet. He devised a recording apparatus for the venous and cardiac impulse. During his professorship in pharmacology, Jaquet kept in contact with clinical medicine partly by consultations and partly through the sanatorium founded and directed by him. Jaquet was the author of various books; in his last, "La médecine qui guérit et la médecine qui tue" (medicine that cures and medicine that kills), he criticized unmercifully certain dangerous and uncertain medical practices.

Marriages

EDWARD FULLER STANTON, New York, to Miss Margaret Gilmore Pendleton of Portland, Ore., June 19.

GEORGE H. STEIN, Harrisburg, Pa., to Miss Elizabeth Wheelock Doughton of Philadelphia, June 16.

WILLIAM JERVEY RAVENEL, Charleston, S. C., to Miss Kathryn Geer Martin of Anderson, June 19.

LEE RHODES REID, Norwich, Conn., to Miss Augusta Blanche Wein of Philadelphia, May 28.

JACOB HARRISON SHUFORD, Hickory, N. C., to Miss Robin Fraley of Statesville, June 25.

WILBERT KENNETH ROGERS to Miss Mary C. Benton, both of Loris, S. C., in June.

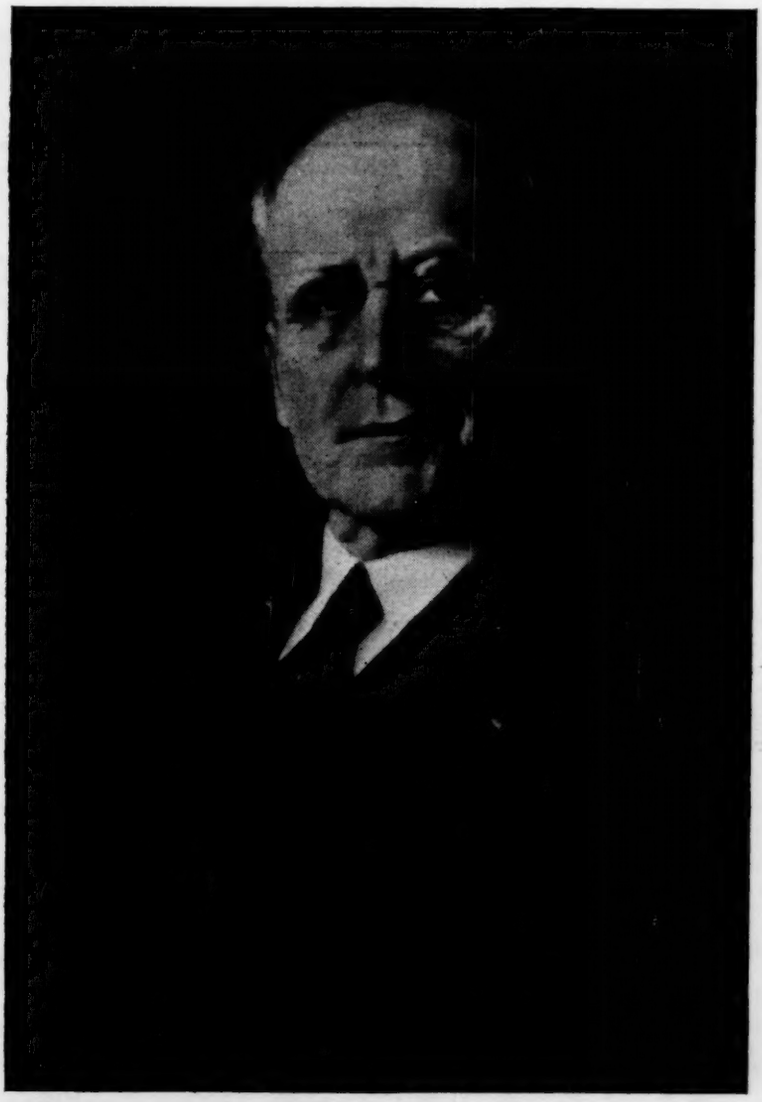
EUGENE E. RAYMOND to Miss Marie Brady, both of Johnstown, Pa., June 26.

WILLIAM F. SEIFERT to Miss Kathleen Lewis, both of Chicago, in June.

HERMAN A. STRAUSS to Miss Jean Heller, both of Chicago, August 2.

Deaths

George H. Simmons ✠ Editor and General Manager Emeritus of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, died September 1, in St. Luke's Hospital, Chicago. Dr. Simmons was born in Moreton, England, Jan. 2, 1852. He came to the United States in 1870 and studied at Tabor College in Iowa in 1871 and 1872 and at the University of Nebraska from 1872 to 1876. He received his M.D. degree from the Hahnemann Medical College, Chicago, in 1882 and was awarded the M.D. degree by Rush Medical College, following additional study, in 1892. In 1884, previous to his study at Rush Medical College, he served in the Rotunda Hospital in Dublin. From 1884 to 1899 he practiced medicine in Lincoln, Neb. In 1896 he established the *Western Medical Review*, acting as its editor, and from 1895 to 1899 he was secretary of the Nebraska State Medical Society and also secretary of the Western Surgical and Gynecological Society. During this early period of his development he gave indications of the editorial genius which was later to bring him world-wide fame. While a freshman in the University of Nebraska he won an important prize for an essay on the sheep industry. At this time he was acting editor of the *Nebraska Farmer*, assistant city editor of the *Nebraska State Journal* and field correspondent of the Omaha *Republican* and the Kansas City *Journal*. With these odd jobs he aided in paying his way through the university and the medical school, and he developed a taste for the use of printers' ink which followed him throughout his life.



GEORGE H. SIMMONS, M.D.
1852-1937

In Lincoln, Neb., he became known as a leader in reform movements. At one time he led an attack to take the government of Lincoln out of the hands of the machine politicians and to restore it to the people. A resolution adopted by the chamber of commerce of Lincoln indicated the willingness of the city fathers to admit the debt of that city to Dr. George H. Simmons for much of its political cleanliness and financial soundness.

In 1899, when the Board of Trustees of the American Medical Association was in search of a secretary for the organization and an editor for its periodicals, a number of leading figures in the medical literary and political world were given consideration. They appeared before the Board of Trustees, many of them with strong endorsements. After long consideration the Board of Trustees chose Dr. George H. Simmons for the position of General Secretary, which he filled from 1899 to 1911, and of editor, which he occupied until 1924. In 1901 he became also General Manager. Before its reorganization in 1901 the American Medical Association was not a truly representative body, and the method of administration of its professional affairs and its business were, to say the least, disorganized. When Dr. Simmons became Secretary in 1899 he initiated the movement which led to the appointment of a committee, of which Dr. J. N. McCormack of Kentucky was chairman and he secretary, to consider ways and means of reorganization. At the meeting of the Association in St. Paul in 1901 the general principles and policies outlined in the Constitution and By-Laws presented by that committee were adopted. The present plan of organization of the American Medical Association is largely due to the work of that committee.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION was established in 1883. When Dr. Simmons took over the editorial supervision and management, its total subscription list was approximately ten thousand. From that time it showed continuous improvement. Furthermore, under his leadership it became a significant weapon in the initiation and progress of great movements for the advancement of medical education and medical science. In 1901 THE JOURNAL began the annual publication of information concerning the medical schools of the country. In 1903 it undertook publication of the results of the examinations of graduates in medicine for licensure by state examining boards. The next step was the organization of the Council on Medical Education and Hospitals in 1905. At the same time the Council on Pharmacy and Chemistry was developed, and in association with it the chemical laboratory and the Department of Propaganda for Reform, which eventually became the Bureau of Investigation. Thereafter came other councils and departments, which were logically an outgrowth of the developments that have been mentioned. In the field of publication THE JOURNAL was supplemented by the American Medical Directory, which was an outgrowth of the Biographic Department; the various *Archives*, of *Internal Medicine*, of *Neurology and Psychiatry*, of *Dermatology and Syphilology* and of *Surgery*, the *American Journal of Diseases of Children*, and many other publications. It occurred to Dr. Simmons to begin publication of a quarterly cumulative index of leading medical publications as a means of providing physicians with up-to-the-minute references to medical periodical literature in an easily accessible form. The success of this publication was so great that it eventually was combined with the *Index Medicus* into the *Quarterly Cumulative Index Medicus*. *Hygeia*, too, was initiated under the leadership of Dr. Simmons as General Manager.

To tell the story of the services of Dr. Simmons in the period from 1899 to 1924 is, in fact, to tell the history of the American Medical Association in that period.

In 1908 he was commissioned a First Lieutenant in the Medical Reserve Corps of the United States Army; in 1917, when the United States entered the war, he was made Major in the Medical Reserve Corps and served diligently in the Personnel Division. In 1921, by order of President Harding, he was awarded the Distinguished Service Medal.

As an editor, Dr. George H. Simmons was alert and fearless. His attacks on quackery and fraud in the field of medicine brought on his unwearying head and shoulders the counter-attacks of those who saw their unscrupulous exploitations exposed and their incomes discontinued. It was his policy never to reply to any of the personal attacks made on him in the course of his service. Innumerable medical writers would testify to the manner in which he devoted himself personally to the education of younger men in editorial technic. His personal writings were few, but much of what he wrote and developed appeared anonymously in the pages of THE JOURNAL. His published papers include, however, one on medical education and preliminary requirements, which apppeared in THE JOURNAL in 1904; one on the American Medical Association, published in THE JOURNAL, June 2, 1906; one on the commercial domination of therapeutics and the movement for reform, and another under the title "What the American Medical Association Stands For." In 1914 he read a paper before the Southern Medical Association, entitled "Work of the Council on Pharmacy and Chemistry: Its Effect on Medical Progress"; and as president of the Institute of Medicine of Chicago, which position he held in 1921, he read an address under the title "Medical Periodical Literature."

In 1924 he resigned as Editor and General Manager of the American Medical Association and became Editor and General Manager Emeritus. At that time a number of leaders in American Medicine arranged for the painting of his portrait, which was presented to him at a testimonial banquet in Chicago on June 9, 1924. Hundreds of physicians attended, and he received messages of appreciation and congratulations from all over the world.

This, then, is briefly the record of Dr. George H. Simmons as an executive and administrator. His work for the American Medical Association was characterized by intelligence, unselfishness, initiative, honesty and righteousness. In his personal life he had his share of physical and mental suffering. He weathered storms of unjust criticism and false characterization of his administration. He devoted himself almost objectively and completely devoid of personal interest to the public career which he had chosen. Unquestionably he was the greatest factor in his generation in the development of the American Medical Association and the profession that it represents.

After his retirement he traveled extensively for several years. Since that time he has resided in Florida but has spent some time every other year in Great Britain and in the intervening years in Chicago, frequently coming to the headquarters office and making available to his successors the experience of years and the brilliant insight which he brought into medical problems. The medical profession of the United States owes him a debt which it could never pay and which he never wished to collect.

Richard C. Norris, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1887; member of the Medical Society of the State of Pennsylvania; emeritus professor of obstetrics at the Medical Chirurgical College, Graduate School of Medicine, University of Pennsylvania; formerly assistant professor of obstetrics at his alma mater; at various times on the staffs of the Methodist Episcopal Hospital, Philadelphia Hospital and the Preston Retreat; at one time editor of the "Atlas and Epitome of Gynecology," and author of the "American Text Book of Obstetrics"; aged 73; died, June 10, in Los Angeles.

Otto Von Huffman ⊕ Mount Kisco, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1903; member of the American Association of Pathologists and Bacteriologists; formerly associate professor of medicine at the New York Post-Graduate Medical School, Columbia University, New York; at one time dean of the Long Island College Hospital, and member of the state board of regents examiners, University of the State of New York; on the staff of St. Luke's Hospital; aged 55; died, June 9, of coronary thrombosis.

Milton P. Overholser ⊕ Harrisonville, Mo.; Kansas City Medical College, 1884; past president of the Missouri State Medical Association; past president and secretary of the Cass County Medical Society; formerly councilor of the fourteenth district of Missouri; for many years member of the state board of health and of the pension board of examiners; at one time superintendent of the State Hospital, Nevada, and the State Hospital, St. Joseph; aged 77; died, June 19, of carcinoma of the prostate.

Henry Marion Neale ⊕ Freeland, Pa.; Jefferson Medical College of Philadelphia, 1880; past president of the board of trustees and formerly on the staff of the Hazleton (Pa.) State Hospital; on the staffs of the White Haven (Pa.) Sanatorium and the Mercy Hospital, Wilkes-Barre; aged 78; died, June 17, of bronchopneumonia.

Samuel Downing, Newport News, Va.; Medical College of Virginia, Richmond, 1914; member of the Medical Society of Virginia; served during the World War; fellow of the American College of Surgeons; formerly represented the U. S. Public Health Service and the Veterans' Administration in his district; on the staff of the Riverside Hospital; aged 44; died, June 14, in Richmond, of carcinoma of the stomach.

Harvey Edmund Webb ⊕ Milwaukee; University of Illinois College of Medicine, Chicago, 1914; formerly secretary and treasurer of the Medical Society of Milwaukee County; fellow of the American College of Surgeons; on the surgical staff of the Johnston Emergency and St. Luke's hospitals; on the visiting staff of St. Joseph's Hospital; served during the World War; aged 52; died, June 12, of coronary occlusion.

Albert Eugene Payne ⊕ Riverhead, N. Y.; New York University Medical College, New York, 1898; past president of the Suffolk County Medical Society; member of the county board of health; physician to the county jail; aged 64; on the staffs of the John T. Mather Hospital and the Southampton Hospital, where he died, June 22, of diabetes mellitus and heart disease.

Frank Wandling Hornbaker, Occoquan, Va.; University College of Medicine, Richmond, 1900; member of the Medical Society of Virginia; for many years connected with the Occoquan Work House and Lorton Reformatory; aged 62; died, June 11, in the Garfield Hospital, Washington, D. C., of tumor of the bladder and diabetes mellitus.

Henry Ecroyd ⊕ Jamestown, R. I.; University of Pennsylvania Department of Medicine, Philadelphia, 1883; medical examiner of the city schools and member of the town council; formerly on the staff of the Newport (R. I.) Hospital; aged 79; died, June 4, of chronic myocarditis and chronic nephritis.

William Preston Patterson, Springfield, Mo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1885; member of the Missouri State Medical Association; county coroner; formerly member of the school board; at one time on the staff of the Missouri Baptist Hospital; aged 75; died, June 7.

James Howard Douglass, Arkansas City, Kan.; Detroit College of Medicine, 1908; member of the Kansas Medical Society; also a pharmacist; served during the World War; on the staff of the Mercy Hospital; aged 55; died, June 10, in Larned, of arteriosclerosis and cerebral hemorrhage.

Benjamin L. Sheldon ⊕ Cedar Rapids, Iowa; Rush Medical College, Chicago, 1902; fellow of the American College of Surgeons; past president of the Linn County Medical Society; on the staffs of St. Luke's and Mercy hospitals; aged 59; died, June 21, of arteriosclerosis and uremia.

Howell Towles Heflin, Birmingham, Ala.; University of Maryland School of Medicine, Baltimore, 1893; member of the Medical Association of Alabama; fellow of the American College of Surgeons; aged 60; died, June 18, in the Birmingham Baptist Hospital, of portal cirrhosis.

George Edward, Canton, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1897; member of the Minnesota State Medical Association; served during the World War; aged 65; died, June 3, in Rochester, of coronary thrombosis.

Ernest Blake Minor, Traverse City, Mich.; Barnes Medical College, St. Louis, 1899; member of the Michigan State Medical Society; aged 67; died, June 12, in the University Hospital, Ann Arbor, of periappendiceal and right subdiaphragmatic abscesses.

Reuben Levi Hurst, Winnipeg, Manit., Canada; University of Toronto Faculty of Medicine, 1909; M.R.C.S., England, L.R.C.P., of London, 1912; aged 55; died, June 3, in the Winnipeg General Hospital of coronary thrombosis and diabetic gangrene.

Samuel P. Oldham ⊕ Owensboro, Ky.; Louisville Medical College, 1897; member of the Associated Anesthetists of the United States and Canada; served during the World War; on the staff of the Owensboro City Hospital; aged 63; died, June 17.

John James Gelz ⊕ St. Cloud, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1909; fellow of the American College of Surgeons; on the staff of St. Cloud Hospital; aged 53; died, June 26, of hemochromatosis.

Thomas Francis Judge, Troy, N. Y.; Albany Medical College, 1901; member of the Medical Society of the State of New York; served during the World War; formerly county coroner; aged 64; died, June 1, of carcinoma of the colon.

Martha Burdick Newby, Denver; Harvey Medical College, Chicago, 1900; aged 72; died, June 14, at the Denver General Hospital, of ruptured ulcer at the pylorus and peritonitis.

Correspondence

INJURY TO THE RECURRENT LARYNGEAL NERVE

To the Editor:—In the editorial "Total Thyroidectomy for Congestive Heart Failure," appearing in THE JOURNAL, July 17, the following statement occurs: "Injury to the recurrent laryngeal nerve was recorded in 8.2 per cent of the cases. In no instance was it bilateral or permanent." This statement includes an opinion widely held among clinicians even though it contains a gross anatomic ambiguity as well as, by implication, a definite falsehood. According to the BNA there is no recurrent laryngeal nerve. What is meant by the customary term is the left laryngeal or recurrent nerve, as there is only one recurrent nerve in the body. The reason for this asymmetry is that in the embryologic rotation and descent of the heart from the neck into the thorax the left laryngeal nerve is caught between its origin and insertion and pulled down with it, coming to rest in a loop around the aorta. This distinction is important, as it fully explains the observation of left—and only left, except in cases of anomaly—vocal paralysis which obtains in thoracic diseases involving the mediastinum—infections, growths, aneurysms.

JOHN F. QUINLAN, M.D., San Francisco.

FORTY DAYS' CONSTIPATION

To the Editor:—In the Correspondence section of THE JOURNAL, July 10, Dr. W. K. McCandliss cites a case of obstipation in which a bowel evacuation did not occur for forty days.

In Samson Wright's textbook of Applied Physiology (ed. 6, New York, Oxford University Press, 1936) there appears the following (p. 565):

> A case is recorded of a man who went from June 18, 1900, to June 21, 1901, without a motion. Towards the end of that time he belched a good deal and suffered from some pain; the abdomen was distended; he felt weak and lost some weight. After the colon was cleaned out he recovered rapidly.

LOUIS GOODMAN, M.D., New Haven, Conn.

PICROTOXIN IN THE TREATMENT OF BARBITURATE POISONING

To the Editor:—In their paper on picrotoxin in the treatment of barbiturate poisoning in THE JOURNAL, July 31, Kline, Bigg and Whitney state: "The importance of picrotoxin in the treatment of this patient must be weighed carefully, as recoveries do occur in severe cases when nothing more than general supportive measures are employed."

Chang and Tainter (Unusual Case of Barbital Poisoning with Recovery, THE JOURNAL, April 18, 1936, p. 1386) reported a case in which recovery occurred from the effect of 270 grains (18 Gm.) of sodium barbital, and Gwathmey (The Barbiturates: The Safe Preliminary Medication for Surgical Operations, *ibid.*, Nov. 17, 1934, p. 1536) has reported a recovery from 172 grains (11 Gm.) of ipral. I have reported a case (Paraldehyde and Other Preliminary Hypnotics, *Anesth. & Analg.* **15**:14 [Jan.] 1936) in which the patient recovered after taking 168 grains (11 Gm.) of sodium amytal, and Alexander (Narcosis Therapy in Psychoses, *Rhode Island M. J.* **19**:151 [Oct] 1936) has administered 542 grains (35 Gm.) of sodium amytal in an eight day period without deleterious effect.

These figures indicate the probability of recovery in Kline, Bigg and Whitney's case, in which only 45 grains (2.9 Gm.) of amytal was ingested, irrespective of the use of picrotoxin. Barring possible individual susceptibility, the estimated 2 to 3 Gm. as the fatal dose of amytal underestimates the margin of safety of the barbituric acid group.

ALBERT H. MILLER, M.D., Providence, R. I.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PREVENTION OF RICKETS BY SUN EXPOSURE

To the Editor:—Please advise me with regard to the minimum skin surface that must be exposed to the sun in New York City during July and August, and the minimum length of time for a normal 6 months baby to constitute adequate prophylaxis against rickets. Is there any variation between the white and the Negro?

HENRY LAVEN, M.D., Brooklyn.

ANSWER.—The simple questions here propounded are difficult to answer exactly. The simplest method of exposure of the skin surface to the sun is that practiced for many years by Rollier in Switzerland. During the late spring months, when the infant can be exposed outdoors, the wrists and ankles are first exposed for short periods and gradually the arms and legs are exposed and then the trunk of the body. Tanning is the sign that ultraviolet radiation has been effective, though of course not all infants will tan, and overexposure may result in sunburn. The answer, therefore, to the minimum skin surface that must be exposed would be starting with the gradual exposure, the maximum amount of skin that could be exposed without harm to the infant. As to the minimum length of time of exposure to the sun for a 6 months baby to insure adequate prophylaxis against rickets, no arbitrary answer can be given. A fair skinned child, who will not tan naturally, cannot be exposed as long as a dark skinned child, who will tan easily. It is said that a Negro will require a longer exposure than fair skinned white children. There are many factors that interfere with the ultraviolet rays of direct sunlight in large cities: fog, haze and city smoke all tend to cut down the effective ultraviolet rays. It is also well to realize that not only the direct sunlight ("direct shine") but also the reflected light of the sun ("sky shine") possesses antirachitic power. The child in the shade receives only sky shine. When placed in the sun, he receives both direct shine and sky shine. To receive all the sky shine possible there must be no obstruction between the child and the dome of the sky. Therefore a child on a narrow street cannot possibly receive as much sky shine as a child in an open park or on an open roof or balcony. Direct shine, as well as sky shine, is greatest in the middle of the day. Both can produce tan, and the dust and smoke of cities—likewise clouds and fog—will cut down or completely eliminate the ultraviolet rays in each. From experience with a group of infant welfare babies for who only direct exposure to the sun was relied on as prophylaxis against rickets during the summer months, it was found that nearly 50 per cent of the babies showed clinical signs of rickets in September. In cities in the temperate zone, such as New York, it would seem advisable, if possible, to supplement the sunlight with small amounts of additional antirachitic agents in order positively to prevent the development of rickets.

DEAFNESS IN EARLY CHILDHOOD

To the Editor:—In the past two years, four cases of deafness in early childhood have come to my attention. The oldest patient was 4¼ years of age, the youngest 17 months. I am unable to find much information on diagnosis or treatment. Please inform me as to methods of diagnosis. Also, can you tell me how early in life the sense of hearing develops?

M.D., Colorado.

ANSWER.—The diagnosis of deafness depends on tests, most of them subjective in character and hence fallible. The accuracy of the test is dependent on the age of the person, his intelligence, his interest and his self interest. In very young children the diagnosis of deafness is difficult because it is often impossible to obtain cooperation. In the case of very young children the first thought one should have in an instance in which a child does not begin to speak at the proper time is that the child may be deaf. Most persons are mute because they were born with a profound hearing disturbance and hence have not learned to speak, or they became deaf at such an early age that they forgot what speech they had acquired. It is true that there are cases of mutism primary in character wherein the person has good hearing, but these are exceedingly rare and for the present discussion need not be considered. Further, some children do not learn to speak because they are backward mentally. Here a pediatrician or child psychologist can demon-

strate the mental retardation in other ways. Such a child, for instance, in addition to other things does not learn to feed itself or to perform those other duties which normal children of that age are capable of performing.

There are a number of objective tests that will determine the presence of hearing in infants and very young children; among these one highly recommended consists of striking a c-4 (4,096 double vibration) fork very loudly behind the patient and observing whether he blinks (oculopalpebral reflex). A positive result means that the patient can hear the high tones and therefore has no deafness of the cochlear or perceptive type. This test is not infallible. There are variations of this test; instead of looking for blinking, one observes whether the pupils dilate.

The sense of hearing is probably fully present at birth.

NONSPECIFIC URETHRITIS DURING INFLUENZA

To the Editor:—Can a nonspecific urethritis, with hematuria, frequency, urgency and dysuria arise from influenza? A married man, aged 52, whose general health was good, had had no serious illness since 1917, when he was taken with a sudden attack of chills. He was treated by a competent physician who diagnosed influenza; it required five weeks' convalescence for complete recovery in 1917. The present illness began with fatigue for about two weeks, then headache and rhinitis; December 28 he became very weak, with backache, and went to bed. An hour later he felt a little better. His wife uses a diaphragm. Coitus at this time caused pain at the glans. He had headache and a fever of 102 F. Shortly afterward he got up to telephone, and the cooling off in the hall while telephoning, he believes, caused a chill. This chill became so violent that his bed shook. After taking hot milk and brandy, he vomited. This broke the chill, and perspiration started. Two hours after he took to bed the family doctor called. He was taken to the hospital in an ambulance. He remained there five days and several attacks of chills were controlled by febrifuge medication. On the second day in the hospital the backache grew worse, and there was an annoying ticklish sensation in the perineal urethra, but no discharge; however there were frequency and urgency, about every three hours; he used the urinal from the ward next door. He was urged to drink much water, and this increased the frequency. On the third day out of the hospital, eight days after the acute onset, he injected into the urethra a very hot solution of strong potassium permanganate, which he thought would stop the ticklish sensation as well as the urgency and frequency. A few hours afterward he passed blood in the urine, and urgency became worse than before, and in addition he now felt pain at the end of urination. Frightened, he consulted a urologist. The urologist found nothing alarming by rectal examination. A preparation containing oil of santal was ordered. The pain was almost at once relieved and in three days the bleeding stopped. The frequency, urgency and dysuria also abated within a week. The second week after consulting the urologist he was put on alkalis. Ten days after the administration of oil of santal he went out on a hike, caught cold and passed blood again, with frequency and urgency. Oil of santal relieved the symptoms again, but coagulated blood was now passed, and in four days a small epididymitis formed on the right side; there was no pain, but the testicle was tender. The patient tells me that the urologist gave him a prostatic massage two days prior to the swelling of the right testicle and he wants to know if the massage may not have started the epididymitis. He comes to me thinking I shall be a bit less rough in examination. I cannot claim any expert knowledge and do not know what else to prescribe than rest, suspensory, oil of santal and a mild diet. I advised also hot baths several times daily. In addition to the foregoing questions please answer the following. The prostate is very slightly enlarged but soft in consistency, and the gentlest manipulation produces a profuse bloody discharge by way of the urethra. Is this a nonspecific case of urethritis? Laboratory examination of several smears failed to show any typical cocci, but many pus cells were seen in one specimen. What is the best treatment in a case of this kind? Bacilli with clubbed ends were reported in one specimen. What is their significance? Is it safe to do any manipulation, such as prostatic massage and emptying of the seminal vesicles? The patient passed clotted blood until a short time ago when he had coitus, after which blood ceased to come. Does this indicate that intercourse should be interdicted? Can coitus, normally performed, be regarded traumatic? He cannot remain entirely off his feet. What is the next best thing to tell him?

M.D., New York.

ANSWER.—It has been shown that, in many cases of respiratory infection, cocci may be found in the urine without giving evidence of any infection in the genito-urinary tract. With a lowered resistance or in the presence of virulent bacteria, the prostate gland and urethra not infrequently become actively infected and are the cause of urinary symptoms such as are here described. It may be difficult to identify the infecting organism in a case of this kind. Infection with Neisseria gonorrhoeae should of course be excluded in every case, without regard to the previous history. This is best done by culture of the urethral or prostatic secretion, even though the gram stain may be negative. The bacilli with clubbed ends in the secretion are probably due to secondary contamination and are of no clinical significance.

The treatment of infections of this kind consists largely of rest. Exercise, coitus or hard work should be strictly forbidden. Medication other than oil of santal is not of much value. The application of heat by sitz baths or rectal Elliott treatment should be tried. Prostatic massage is contraindicated in the acute stages of the disease, particularly as long as there is hematuria following massage. After the acute stage has subsided, massage may be cautiously employed at intervals of a week, with gradually increasing pressure and frequency. Injections of any kind into the urethra would be contraindicated until the acute stage has passed and should then be employed only under the guidance of a specialist.

SEBORRHEIC DERMATITIS OF EYELIDS

To the Editor:—I would appreciate information on the therapy of a seborrheic dermatitis involving the upper eyelids in a woman, aged 30 years. The blood, the urine and the rest of the examination are negative with the exception of an endocervicitis (with leukorrhea) and an acneform eruption on the face and rest of the body. The patient receives pills of ferrous carbonate for an anemia which she had when I first saw her. The cervix is to be treated by electrocoagulation (with a short wave diathermy machine). She is getting close range ultraviolet therapy to the acneform lesions (to the point of scaling). I have regulated her diet to exclude large amounts of fats and carbohydrates. In addition, she receives lotio alba treatment to the body lesions, after the face is treated by boric acid compresses twice daily to the affected areas. Would the following remedies, suggested for the treatment of seborrheic dermatitis of the scalp, cause ocular injury should some trickle into the eye:

		Gm. or Cc.
℞	Salicylic acid	1.0
	Ammoniated mercury	2.0
	Rose water ointment to	30.0

		Gm. or Cc.
℞	Mercury bichloride	0.01
	Chloral hydrate	8.00
	Spirit of formic acid	15.00
	Castor oil	0.50
	Alcohol (80%)	180.00
	Oil of bergamot enough to perfume	

I would appreciate prescriptions containing ingredients that will not injure the eyes.

M.D., Illinois.

ANSWER.—The ointment can be used on the eyelids without any fear of ill results. The lotion, while unobjectionable for the scalp, is likely to be rather strong for the eyelid. The trouble is not so much with any one of the ingredients as with the fact that 80 per cent alcohol is too strong for application near the eye. If one leaves out the castor oil and the bergamot oil, which while useful on the scalp are not needed on the eyelid, one can dilute the preparation with 4 parts of water, which would possibly lessen the therapeutic value but also the liability to produce disagreeable irritation in the eye, should some inadvertently enter the conjunctiva.

TOXICITY OF TRICHLORETHYLENE

To the Editor:—The following information is desired concerning the use of trichlorethylene: 1. Toxic effects because of its use in industry as a degreasing agent. 2. Skin reaction resulting from a defatting process. 3. Toxic properties when inhaled. 4. The safe exposure to workmen in parts per million. 5. Safeguards, if any, against overconcentration in air. Please mention available literature.

HAROLD M. JAMES, M.D., Dayton, Ohio.

ANSWER.—Publications descriptive of the toxicology of trichlorethylene have now become so voluminous as to prohibit listing in this department. An apt presentation on trichlorethylene may be found in Hamilton's "Industrial Toxicology" (New York, Harper & Brothers, 1934), which will provide extensive literature materials. The specific questions presented are now briefly answered.

1. When trichlorethylene is used as a degreasing agent there arise no peculiar manifestations as to toxicity, setting this use apart from others, giving rise to vapors. In this use trichlorethylene is often kept boiling and in open tanks. Evaporation is prevented in marked degree by coils of piping around the tank periphery, through which cold water is circulated. This protection is far from perfect. Workers are prone to lift baskets of articles submerged in trichlorethylene for degreasing prior to complete draining and drying. Qualitative tests for trichlorethylene vapors will be positive anywhere in a work room in which an open type degreaser is in use. The toxicity problem becomes one of inhalation.

2. No specific property is possessed by trichlorethylene setting it apart from other skin defatting agents of equal potency. Exposed skins may become dry, scaly, fissured, papillated and at times infected. However, there is some reason to believe that trichlorethylene may produce systemic disease following absorption by the skin.

3. Although trichlorethylene is chemically closely related to carbon tetrachloride, manifestations after exposure may be quite dissimilar. Gross exposure through the inhalation route may lead to active narcosis. This agent has been proposed as a

surgical anesthetic because of its narcotic action, but unfortunate results militate against its use. While the action of carbon tetrachloride is principally on the liver, respiratory tract, gastrointestinal system and kidneys, trichlorethylene stands out as affecting the central nervous system, particularly the cranial nerves. The fifth and optic nerves are apparently vulnerable to an exquisite degree. Psychic disturbances are well known; hysteria is common; trichlorethylene addiction is well established; personality changes take place. Minor effects include headache, dizziness, loss of appetite, tachycardia, vomiting and loss of weight.

4. The upper limit of safe use is perhaps not above 200 parts per million, and 100 parts per million is accepted by some as the threshold of danger. If exposure is a matter of hours, lower limits should be enforced.

5. The chief safeguard in avoiding danger from this substance is to limit its use to completely enclosed systems, such as in dry cleaning. This vapor is measured quantitatively only with difficulty. No less, every use of trichlorethylene in appreciable amounts should be associated with adequate testing so that the threshold of danger is never reached. Fortunately, the cost of this excellent solvent is so high as to necessitate conditions of use that are unfavorable to evaporation losses of great extent.

DIAGNOSIS AND TREATMENT OF LEAD POISONING

To the Editor:—I was recently consulted by a man, aged 27, who complained of pain in the feet and knees and weakness of the legs. The patient dated the onset of the symptoms to August 1933. At this time he had some pain in the right thigh and testicle, and because he feared this might be due to a previous gonorrheal urethritis he consulted a highly competent urologist and was assured that there was no remaining gonorrheal infection. The patient's history disclosed that he had had progressive weakness of the legs with pain at times in the feet and ankles. During the three weeks prior to consulting me he had developed pain in the legs. In August 1936 he had suffered a moderately severe gastro-intestinal upset and from that time until the present had complained of vague epigastric pains that were not related to food intake. There had been increasing constipation and for about three months he had been regularly taking liquid petrolatum. For the same length of time the patient had not been sleeping well and had complained of a metallic taste in the mouth. In the last two years there had been a weight loss of about 12 pounds (5.4 Kg.). For about ten years the patient had been employed in a local newspaper office, where his work was limited to the preparation of lead plates for the advertising cuts and he was each day exposed to the fumes of molten lead. Physical examination revealed that he was 5 feet 6 inches (168 cm.) tall and weighed 130 pounds (59 Kg.). He appeared slightly anemic. The teeth appeared quite normal; there was no evidence of a lead line on the gums. The heart, lungs and abdomen were entirely normal. The genitalia showed only slight tenderness of the right epididymis. The extremities appeared normal. There was slight pain on full motion of the knees and ankles, but there were no evidences of arthritic changes and no history of swelling or redness of the joints; however, a diagnosis of infectious arthritis had been previously made by another physician. There were some sensory nerve changes and slight pain over the course of each sciatic nerve. The blood count showed a hemoglobin of 90 per cent, erythrocytes 4,760,000, leukocytes 8,900, differential count normal. Smears were examined in three laboratories and none of these showed any basophilic stippling of the red blood cells. Urinalysis was entirely negative. A tentative diagnosis of subacute lead intoxication was made and a twenty-four hour urine specimen which was analyzed for lead showed 0.198 mg. of lead. The patient was put on a low calcium, high phosphorus diet. In addition he is receiving 4 Gm. of sodium phosphate, 3 Gm. of ammonium chloride and 15 cc. of 50 per cent magnesium sulfate daily. Naturally the patient is not at present working. 1. In your opinion is this diagnosis correct? 2. Should this patient eventually return to his previous work, what prognosis is to be offered concerning the return of the symptoms in the same or increased form? 3. In such a case when the symptoms are subacute would it be more advisable to attempt to fix the lead rapidly than to attempt to delead the patient as I have done?

M.D., Indiana.

ANSWER.—1. So protean are the manifestations of the action of lead on the human body that it is sometimes quite impossible to make a diagnosis without reservation. In the present instance the quantity of lead mentioned suggests the reasonableness of a diagnosis of lead poisoning, but the making of quantitative determinations of lead in the urine is fraught with difficulty and frequently associated with error. In an earlier day, the making and manipulation of lead type and cuts was a rather prolific source of lead poisoning. Lately, lead poisoning has distinctly lessened in newspaper and other printing plants. A desideratum for the diagnosis of lead poisoning is the quantitative determination of lead in the atmosphere at the work place. Epididymitis as a manifestation of lead poisoning is known but is a rarity.

2. If the patient recovers to the point that he is able to work, the most practical step that may be taken is to remove further exposure at the work point and then permit him to resume duties. The prognosis as to recurrence of lead poisoning, if, in fact, such disease has existed, primarily depends on the elimination of future exposure. It is possible, but unlikely, that recurrences of lead poisoning might arise from lead already present in the body. On the assumption that it has been several months since the last exposure, this becomes improbable.

3. At the present time there exists distinct controversy as to the respective merits of attempting to delead patients on the one hand and entirely avoiding deleading or fixing of the lead on the other. Unless the patient can be placed under a hospital regimen, deleading probably should not be attempted. Left alone, spontaneous elimination of lead will take place to some extent.

FATIGUE WITH LOW METABOLIC RATE

To the Editor:—An old patient and friend of mine, aged 60, has always been a hard worker, inclined to take life seriously and somewhat neurotic. For many years he complained of rather unusual and marked fatigue but in spite of that continued strenuous work with considerable responsibility. About three years ago the fatigue became so marked that careful investigations were made and it was found that he had a low basal metabolism: minus 32, minus 30 and minus 28 on different occasions and with cholesterol 270 mg. He was put on thyroid with immediate and rather marked beneficial effect. The symptoms returned after several months and other basal metabolism tests were made showing always minus 32 to minus 20. The dose of thyroid was increased somewhat and it was advised that the dose be balanced against subsequent tests, but he was called out of the city and remained about a year. On his return I found him taking 1½ grains (0.1 Gm.) of thyroid extract, with a metabolism reading of about minus 20. The fatigue is still quite marked, his endurance is considerably limited, and his activities are cut in half. A very annoying symptom is burning in the feet and back of the legs and at times slight cramping. These symptoms have been present more or less during the past two years but have become more marked in recent months. The temperature when observed has ranged from 96 F. in the early morning to 97.8 in the afternoon. There is now and has been for several years a marked periodic insomnia. Can a balanced ration of thyroid be expected to relieve these symptoms? If not, what other measures could be used to bring relief from the symptoms, especially the burning of the feet and legs?

M.D., Texas.

ANSWER.—In cases of fatigue associated with a low metabolic rate there is always the question of how much the fatigue is due to the low metabolic rate or whether the low metabolic rate is due to fatigue. With a rate as low as this, however, it would appear possible that a hypothyroidism was present. The presence of a burning sensation in the feet and cramps in the calves of the legs may be due to a circulation impaired because of a hypothyroidism, to changes in the cardiovascular system consequent on some other factors than hypothyroidism, or possibly to some change in the calcium or chloride metabolism. Other conditions aside from the hypothyroidism should be ruled out, as, for instance, anemia. It is to be expected that symptoms of hypothyroidism would be relieved by an adequate dose of thyroid if the symptoms are entirely due to that condition. A good vacation, with complete rest and relaxation while taking desiccated thyroid, may be more efficacious in bringing the basal metabolic rate into the normal range than merely giving more thyroid alone.

The peripheral circulation can also be improved by the use of the theobromine derivatives, such as the alkaloid theobromine or theobromine with sodium acetate given in 0.5 Gm. grain doses three times daily with some or complete relief of symptoms. In selected cases, insulin free tissue extract in small doses intramuscularly gives relief while in others it may merely make the symptoms worse. Patients who have an impaired peripheral circulation to the extremities should be warned of the dangers of traumatic injuries to the extremities.

MERCURY POISONING

To the Editor:—What are the ordinary tests for mercury poisoning by ingestion? What pathologic changes are shown in the stomach lining and what tests are made on the gastric contents? How long after the ingestion of 10 or 20 grains (0.16-1.3 Gm.) of mercury bichloride does death occur? Has a minimum lethal dose ever been determined?

W. W. BOYNE, M.D., East St. Louis, Ill.

ANSWER.—The most serviceable test for mercury in the stomach contents is based on the fact that metals which are more electropositive than mercury (such as copper, zinc, iron and aluminum) liberate metallic mercury from solutions. The test is performed as follows:

To a portion of the stomach contents add one-sixth volume of chemically pure hydrochloric acid. Place in this mixture one or two small strips of bright copper foil and boil the mixture for a few minutes. If mercury is present in the material, the copper foil will receive a silvery deposit. Remove the foil, wash with water, alcohol and ether, and dry between filter paper. To prove that this deposit is mercury, cut the copper foil into small bits, place in a reduction tube and heat the lower end over a free flame until the copper glows slightly. The mercury sublimes and collects on the cool portions of the tube. Microscopic examination of the sublimate reveals the

characteristic globules of mercury. For further verification of mercury, one may remove the copper foil, place in the tube a crystal of iodine, and stopper with a cotton plug. After standing for a while the sublimate becomes red from the formation of mercuric iodide.

A grayish white eschar is found on the lips, mouth, pharynx and esophagus. The stomach is firm and contracted and looks as if cooked. The mucosa is of a uniform pale violet, which is the result of the mouse gray tint of the coagulated blood in the vessels blending in with the white coloring of the escharotic epithelium.

Death usually occurs after from five to ten or even twenty days. Death within a few hours is most exceptional. Even less than 0.1 Gm. may cause death in a sensitive person, while 0.5 Gm. and even 5 Gm. have been recovered from.

ORAL TREATMENT OF DIABETES—CHANGE IN LIFE EXPECTANCY WITH INSULIN

To the Editor:—Five of eight patients use insulin; the other three refuse it but adhere strictly to their diet. Is there any adequate treatment by mouth? In Beckman's General Practice, myrtillin is mentioned, but none of the drug houses seem to carry either a tincture or a fluid-extract of it. Many years ago (over fifty) a Swiss family in my town made a tea from blueberry leaves which it used for diabetes; could the myrtillin which it contained have been of benefit?

M.D., Pennsylvania.

ANSWER.—There is no adequate treatment of diabetes by mouth today. What will happen tomorrow no one can predict. Myrtillin has not been used for years. Those most interested in it and competent to use it have dropped it.

At the present time insulin injected parenterally affords the only treatment specific for diabetes. One must insist that insulin be taken by those patients whose diabetes is so severe that their urine is not sugar free when they are on a diet necessary to maintain their weight and strength. In talking with patients averse to the idea, one should contrast the mortality today with that prior to 1922. Before the introduction of insulin (1) children, despite rigid dieting, died within twelve months, (2) the mortality of diabetic coma among children was 100 per cent and (3) in all diabetic persons, young and old, the duration of life after the onset of diabetes was only from four to five years. Today (1) the life expectancy of a diabetic child at age 10 is 31.7 years (estimated by the Metropolitan Life Insurance Company); (2) the mortality from coma in children (if not hopelessly far advanced before treatment is begun) has been reduced to almost zero in the better hospitals, and (3) there has been a threefold increase in the duration of life of all persons with diabetes.

If patients who need insulin but have refused it are not open to these arguments or to persistent persuasion always without rancor, it is best to advise them to select another doctor in whom they have more confidence. At the same time the physician should concentrate on patients who do take insulin so that their superiority in comfort, health and efficiency may be noted by every one.

FRIEDRICH'S MODIFICATION OF PREGNANCY TEST

To the Editor:—I have been interested in Friedrich's modification of Visscher and Bowman's chemical pregnancy test, abstracted on page 80 in the January 2 issue of THE JOURNAL. Will you let me know if there has been any confirmation of this work and also your opinion concerning it. I have done quite a number of these tests, using the bunsen burner method described in the abstract, and I am so far pleased with the results obtained.

WILLIAM C. STEPHENSON JR., M.D., Roanoke, Va.

ANSWER.—The modification of the Visscher-Bowman test as described by Friedrich (*Monatschr. f. Geburtsh. u. Gynäk.* **103**:185 [Oct.] 1936) has not as yet been verified by other workers, although the original test has been reported on rather favorably by Dodds (*Brit. M. J.* **2**:224 [Aug. 1] 1936), who in an investigation on 100 pregnant women found the test to be correct in ninety, and on the urine of 80 nonpregnant women there were nine that responded as positive, a correct reading having thus been made in 89 per cent of the cases tested. Wiesener (*Zentralbl. f. Gynäk.* **60**:1588 [July 4] 1936), on the other hand, states that the titration method is unreliable but reports that his glass mortification reaction gave a 93 per cent correct diagnosis in early pregnancy and a 91 per cent correct result in nonpregnant women.

Although the modification of the test as described by Friedrich is simple, it seems that the color distinction as described is too fine.

In extensive series the original Aschheim-Zondek test has been found to be reliable in about 99 per cent of cases tested, while the Friedman modification is correct in about 98 per cent. Because of the reliability of the latter tests it is felt that at the present time none of the more simple reactions can be used with a sufficient amount of security to replace the Aschheim-Zondek or Friedman test.

PSYCHOSIS IN MALARIA

To the Editor:—I have been consulted with regard to an acute maniacal attack which occurred in an American woman, aged 42, located in a tropical country. There was an indefinite preceding history of malaria, with no undoubted attacks for four years except that she said she had a fever one and one-half days before hospitalization. She was, however, afebrile on admission and no plasmodia were found in the blood, and she showed no subsequent symptoms of malaria. In spite of this she was given the usual antimalarial treatment, consisting of quinine for four days, followed by atabrine for several days. The third day after discontinuance of atabrine she had one dose of plasmochin. On the same day, and to some extent before the plasmochin, she began to develop an acute maniacal condition, which increased in severity for several days. She was placed in a mental hospital under British physicians and pronounced in an extreme maniacal condition. This lasted nineteen days and she was in the mental hospital three months and was then discharged apparently in good condition. Is it reasonable to suppose that this was a toxic psychosis from drugs administered or that it occurred entirely independent of the malaria or the treatment?

M.D., Kansas.

ANSWER.—Psychotic states have been described following the administration of atabrine and apparently due to a toxic effect of the drug (Kingsbury, A. N.: *Lancet* **2**:979 [Nov. 3] 1934). This would seem to be a rare occurrence, however. In the case described the psychosis might have been due to malaria, if this is believed to have been present, or to the atabrine, or have been an independent occurrence. There is nothing to guide one in the history given as to which is the correct explanation. A history of the events preceding the psychosis would probably be of assistance in deciding as to the latter possibility.

CONTACT DERMATITIS

To the Editor:—A white married woman, aged 23, has annual recurring "blisters" on her legs and feet. For the past thirteen years (she has lived in New York for five years, previous to that time being a native of Connecticut) these "blisters" have returned the early part of June and have disappeared in late September or early October without medication. The onset is as follows: Several "mosquito-like bites" on both lower extremities, usually the forelegs and feet, develop, which quickly progress with the formation of an area of erythema about 1 cm. in diameter. In the center of these lesions a vesicle forms which contains a clear serous fluid. This vesicle within twenty-four to forty-eight hours grows until it measures from 1 to 2.5 cm. in diameter. There is itching. At this point, owing to trauma, the vesicles or bullae rupture with subsequent oozing of serous fluid. They quickly close and refill again. Such a lesion may stay throughout the three to four months period. On the thighs and hands and arms similar lesions appear but never progress beyond the mosquito-like stage. These itch slightly. A brother is sensitive to barn dust. A sister is "asthmatic" and is being desensitized. Physical examination for a focus revealed nothing pathologic. The patient has flaming red hair and tender white skin and is only moderately covered with freckles. I was under the impression that I was dealing with either a food sensitivity or pollen or grass sensitivity. I therefore scratch tested her for those foods which one usually eats for the first time in June; viz., strawberries, plums, apricots, cherries and peaches. I have also scratch tested her for sensitivity to lamb's quarter, bluegrass, orchard grass, timothy, redtop, sweet vernal grass, ragweed, both dwarf and giant, and cocklebur. These have all been negative. I withdrew some of the serum from a bulla and injected it intracutaneously without reaction. I made a smear of the serous fluid and found many eosinophils, lymphocytes and polymorphonuclear cells. There were no micro-organisms. The white and differential blood count revealed 6,000 white blood cells, of which 44 per cent were lymphocytes, 46 polymorphonuclears, 2 eosinophils, 6 monocytes and 1 basophil. Am I justified in assuming that these lesions are due to a sensitivity? I would appreciate any further suggestions as to procedure and therapy.

M.D., New York.

ANSWER.—The fact that the vesicles have occurred each year in the summertime, from June until September or October, and the fact that there are more on the lower extremities, associated with itching, strongly suggests that the patient has a contact dermatitis, sometimes called "true eczema." Such persons are not allergic in the sense that there is a family inheritance and they do not show any other signs of allergy, such as other allergic manifestations, eosinophilia or positive passive transfer tests (Prausnitz-Küstner reaction).

This patient is almost certainly sensitive to some weed with which she comes in contact, as by walking through vacant lots, especially if she goes barefooted or barelegged through such weeds. It is a simple matter to find out which weed it is; contact or patch tests should be made with the leaves themselves of such weeds as the various grasses, timothy, redtop, orchard or June grass, and also of short and giant ragweed and burweed marsh elder. These are the most common causes, but any other weed or grass may be responsible.

The leaves should be moistened and placed against a clean part of the skin, such as the back, and left for from twenty-four to forty-eight hours. Redness and vesiculation indicate a positive reaction.

As far as treatment is concerned, mere avoidance of weeds, either by keeping away from them or by wearing heavy shoes and stockings, should suffice. If not, injections with an extract of the oily fraction of the responsible weed has given success in some hands; in others, disappointing results have been obtained by this method.

Ordinary skin tests carried out in such cases are usually negative because the materials used contain the protein fraction of the weeds, whereas the sensitivity in contact dermatitis is due to the oily fraction. Furthermore, the contact must be of sufficient duration to allow redness and vesiculation to form.

HAIR TONIC

To the Editor:—Is there any incompatibility in the following for use as a "hair tonic"?

		Gm. or Cc.
℞	Pilocarpine hydrochloride	0.65
	Tincture of cantharides	7.5
	Tincture of capsicum	15
	Castor oil	2
	Quinine bisulfate	2.6
	Mercury bichloride	0.065
	Alcohol	ad 125
	Oil of rose geranium	0.18
	Oil of bergamot	0.5

Dissolve and filter. Label: Poison. Sig.: Massage into the scalp daily or every other day.

M.D., New York.

ANSWER.—The mixture precipitates because of the tincture of cantharides, which contains principles that are insoluble in alcohol. It is perfectly compatible if the tincture of cantharides is omitted. Should one insist on employing the tincture of cantharides, the solvent should be the same as the menstruum employed in the manufacture of the tincture, which is 10 per cent of glacial acetic acid in alcohol. This would, however, make the application probably rather strong in acetic acid. It is therefore best to eliminate the tincture of cantharides from this preparation. It would then be quite unobjectionable excepting, of course, that it should be labeled "for external use only."

HENNA AND INDIGO IN HAIR DYES

To the Editor:—I have an inquiry for trade names of vegetable hair dyes that contain a combination of henna with the powdered leaves of Lawsonia inermis and reng and also powdered leaves of indigo Fera-argenta. These dyes were recommended in Queries and Minor Notes in THE JOURNAL some time ago.

M.D., Minnesota.

ANSWER.—The article from which the information regarding the combinations of henna and reng as hair dyes was derived gives no trade names under which such hair dyes are sold and we have not been able to find any such commercially made dyes. Adelaide O'Brien, of the magazine *Modern Beauty Shop*, in answer to an inquiry writes:

"I regret that I am unable to give you the name of any commercial dye consisting of henna and indigo. The mixture is seldom used in modern hair tinting, because the process of application is a tedious one and the long continued use of such a mixture makes the hair rather harsh and brittle and obscures its natural luster.

"The henna and indigo powders are mixed in varying proportions, that is, about 80 parts of indigo to 40 of henna for a light brown shade, 90 of indigo to 30 of henna for a dark brown. A few ounces of this mixture were then mixed with warm water, and the paste allowed to remain on the hair as a pack for several hours."

The comparatively harmless dyes are not satisfactory. Individual reaction plays an important part in the dyeing of hair and good results can be obtained only by expert work.

TOXICITY OF GREEN ROUGE OR CHROME GREEN

To the Editor:—I would appreciate information as to the nature of the substances used in the polishing and coloring of electrical fixtures. There is one particular substance used in this industry called "green rouge" that I am especially interested in as a cause of toxemic symptoms. Please list references also.

M.D., New York.

ANSWER.—"Green rouge" is the term widely applied to chromium sesquioxide, Cr_2O_3, chrome green. Apart from its pigment properties, this chemical is somewhat extensively used as an abradant for the very fine polishing of steel and other metals. In a paste or liquid form it may be used to impart an artificial patina. Both of these uses appear to be involved in the conditions of work mentioned in the query. Exposure may lead to the well known "chrome holes," particularly if the green rouge comes in contact with breaks in the integument. However, chromic acid, chromates and chromium oxides will attack unbroken skin, particularly in the presence of moisture, leading to a persistent dermatitis. The breathing of chromium oxide dust may induce nasal perforation or widespread nasal inflammation. Very rarely workers become sensitized to the action of chromium compounds leading to gross dermatoses with manifestations suggesting systemic disease.

PERVERSION OF TASTE SENSATION

To the Editor:—I have a patient who has been complaining for the past three years of a peculiar taste in his mouth. His tongue is always heavily coated, and he reports that he can feel pus exuding from one side of his cheek. All tests are essentially negative. Is it possible to have a suppurative discharge from the salivary or parotid glands without any swelling or other clinical evidence?

M.D., New York.

ANSWER.—Two possibilities deserve exploration. Cultures should be made in brain broth from saliva taken aseptically through a cannula inserted into the parotid duct on the suspected side in order to rule out definitely infection of a low grade without obvious symptoms. The teeth should be examined for large metallic restorations. If two or more different metals are found, especially if a tooth under such circumstances is found bearing a large metallic filling adjacent or near to the origin of the perverted sensation, this clue should be followed up. Otherwise this must be classified as a poorly defined neurosis characteristic of a patient in the decades of life.

CARDIAC ANEURYSM

To the Editor:—I recently had a case that came to necropsy showing a large aneurysm of the left ventricle of the heart. Pick's disease was also found. Will you please inform me how rare aneurysm of the heart is; also please give references.

M. L. PINDELL, M.D., Los Angeles.

ANSWER.—Cardiac aneurysm is comparatively rare. In a review of 12,000 necropsies by Lucke and Rea, the instance was 1.25 per thousand. Most such aneurysms follow coronary occlusion but occasionally are traumatic, as when the ventricle wall is just nicked by a bullet. There is a good review on the diagnosis with the report of two cases by Sigler and Schneider in the *Annals of Internal Medicine* (**8**:1033 [March] 1935). This article gives many references.

Some additional references are:

Wallis, A. D.: *Bull. Ayer Clin. Lab., Pennsylvania Hosp.* **3**: 25 (May) 1934.
Rae, M. V.: *J. Tech. Methods* **15**: 136 (March) 1936.
Eliasoph, Benjamin: *J. Mount Sinai Hosp.* **2**: 26 (May-June) 1935.
Linck, K.: *Virchows Arch. f. path. Anat.* **297**: 113, 1936.

ALDRICH DYE MIXTURE FOR BURNS

To the Editor:—Will you please give me the formula of the Aldrich dye mixture for the treatment of burns.

W. F. CANTWELL, M.D., International Falls, Minn.

ANSWER.—The use of gentian violet in a 1 per cent aqueous solution was suggested by R. H. Aldrich (Rôle of Infection in Burns, *New England J. Med.* **208**:299 [Feb. 9] 1933) as a primary treatment for burns. The solution is applied either as a swab or as a spray and is repeated every two hours for twenty-four, at the end of which time a firm eschar is formed.

TOXICITY OF ATROPINE

To the Editor:—Kindly advise me as to the effects and dangers, common particularly to the eyes, of large doses of atropine by mouth, one-thirtieth grain (0.002 Gm.) three times a day. These doses are being used in an effort to reduce the spasticity in a case of parkinsonism. Will the continued dilatation of the pupils produce glaucoma? Is it possible for this patient to develop an immunity to atropine? Is the effect of one seventy-fifth grain (0.0008 Gm.) three times a day over a long period as dangerous as the previous dose mentioned? Is it possible to become so immune to either dosage mentioned that the eyes will be able to accommodate and the mouth will lose its dryness?

M.D., Florida.

ANSWER.—Such atropine therapy would be decidedly dangerous for a person predisposed to glaucoma, otherwise not. Tolerance so that the therapeutic effect is lost may develop earlier than tolerance to the untoward effects. When this occurs, a change to scopolamine is advisable. The interesting suggestion has been advanced to combine the mydriatic drug with an antagonist such as pilocarpine, proper dosage of which must be worked out as required in each individual case.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 28. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 13. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: *Basic Science.* Tucson, Sept. 21. Sec. Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical.* Phoenix, Oct. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: *Basic Science.* Little Rock, Nov. 1. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular).* Little Rock, Dec. 21-22. Sec., Dr. L. J. Kosminsky, Texarkana. *Medical (Eclectic).* Little Rock, Dec. 21. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Sacramento, Oct. 18-21. Sec., Dr. Charles B. Pinkham, 420 State Office Building, Sacramento.

COLORADO: Denver, Oct. 5. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 9. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical (Regular).* Hartford, Nov. 9-10. *Endorsement.* Hartford, Nov. 23. Sec., Dr. Thomas P. Murdock, 147 West Main St., Meriden.

DELAWARE: Dover, July 12-14. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, Dec. 27-28 (probable dates). Sec., Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 15-16. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 12-13. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 19-21. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: *Basic Science.* Des Moines, Oct. 12. Sec., Dr. W. L. Strunk, Decorah.

KANSAS: Topeka, Dec. 14-15. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 7-9. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical (Regular).* Baltimore, Dec. 14-17. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, Dec. 14-15. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 8-10. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 13-15. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Holliste· Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 5-6. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 19-21. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: Jackson, Dec. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 5-6. Sec., Dr. S. A. Cooney, 205 Power Block, Helena.

NEVADA: Carson City, Nov. 1-3. Sec., Dr. John E. Worden, Carson City.

NEW HAMPSHIRE: Concord, Sept. 9. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Oct. 19-20. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 11-12. Sec., Dr. Le Grand Ward, Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Oct. 4-7. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, Dec. 6. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

OHIO: Columbus, Dec. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, Dec. 8. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Basic Science.* Portland, Nov. 20. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia, Jan. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

PUERTO RICO: San Juan, Sept. 7. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Oct. 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 18-19. Director of Medical Licensure, Dr. B. A. Dyar, Pierre.

TEXAS: Wichita Falls, Nov. 8-10. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 8. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 8-10. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, Nov. 8-10. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science.* Madison, Sept. 25. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 11-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Oct. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners and Special Boards* were published in THE JOURNAL, Aug. 28, page 733.

Colorado June Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held in Denver, June 16-18, 1937. The examination covered 8 subjects and included 170 questions. An average of 75 per cent was required to pass. Forty-seven candidates were examined, all of whom passed. Eighteen physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1936)	85, 87, 87, 89, (1937) 82, 82, 84, 84, 84.5, 84.5, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86.5, 87, 87, 87, 87, 87.5, 88, 88, 88, 88, 88, 88, 88.6, 89, 89, 89, 89, 89, 90, 90
Northwestern University Medical School		(1937)	82.5, 86
Rush Medical College		(1935) 88, (1936)	82
Washington University School of Medicine		(1936)	82.4, 85

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Arkansas School of Medicine		(1928)	Arkansas
College of Medical Evangelists		(1932)	N. B. M. Ex.
Georgetown University School of Medicine		(1929)	U. S. Army
Northwestern University Medical School		(1935)	Kansas
Rush Medical College		(1925)	N. B. M. Ex.
University of Kansas School of Medicine		(1936)	Kansas
University of Louisville School of Medicine		(1933)	Kentucky
University of Michigan Medical School		(1927)	Michigan
University of Minnesota Medical School		(1930)	Minnesota
Eclectic Medical University, Missouri		(1907)	Kansas
Washington University School of Medicine		(1933)	Missouri
Lincoln Medical College, Nebraska		(1902)	Nebraska
University of Nebraska College of Medicine		(1931)	Nebraska
Meharry Medical College		(1928)	Tennessee
University of Tennesee Medical Department		(1910)	Tennessee
Baylor University College of Medicine		(1928)	Texas
University of Texas School of Medicine		(1935)	Texas
University of Wisconsin Medical School		(1935)	Wisconsin

Maine July Examination

Dr. Adam P. Leighton, secretary, Maine Board of Registration of Medicine, reports the written examination held at Augusta, July 6-7, 1937. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-five candidates were examined, 24 of whom passed and one failed. Six physicians were licensed by reciprocity after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1934)	86
Georgetown University School of Medicine		(1934)	81, 83
Boston University School of Medicine		(1927) (1935) 82, (1936) 80, (1937) 85	77,
Harvard University Medical School		(1937)	80, 83, 89
Tufts College Medical School		(1932) 82, 83, (1936) 76, (1937) 83	82,
Columbia University Col. of Physicians and Surgeons		(1935)	85
Temple University School of Medicine		(1936)	86
University of Pennsylvania School of Medicine		(1937)	85
Dalhousie University Faculty of Medicine		(1937)	83
University of Toronto Faculty of Medicine		(1926)	78
Laval University Faculty of Medicine		(1933)	84
McGill University Faculty of Medicine		(1931) 80, (1936)	80
Medizinische Akademie Düsseldorf		(1936)*	86

School	FAILED	Year Grad.	Per Cent
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1931)*	68

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Georgia Medical Department		(1926)	Georgia
Harvard University Medical School		(1931)	Penna.
University of Nebraska College of Medicine		(1933)	New Jersey
Dartmouth Medical School		(1906)	New Hamp.
University of Pennsylvania School of Medicine		(1912) (1924)	Maryland, Pennsylvania

* Verification of graduation in process.

Wyoming June Report

Dr. G. M. Anderson, secretary, Wyoming State Board of Medical Examiners, reports 14 physicians licensed by reciprocity at the meeting held in Cheyenne, June 7, 1937. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Colorado School of Medicine		(1904)	Colorado
University of Colorado School of Medicine		(1932)	Colorado
Rush Medical College		(1917)	Iowa
School of Medicine of the Division of the Biological Sciences		(1934)	Nebraska
State University of Iowa College of Medicine		(1935, 2)	Iowa
University of Kansas School of Medicine		(1933)	Kansas
University of Minnesota Medical School		(1932)	Minnesota
Washington University School of Medicine		(1935), (1936)	Missouri
University of Nebraska College of Medicine		(1927), (1931), (1934), 1936)	Nebraska

Book Notices

Public Medical Services: A Survey of Tax-Supported Medical Care in the United States. By Michael M. Davis. Cloth. Price, $1.50. Pp. 170. Chicago: University of Chicago Press, 1937.

The subject of medical services supported by taxation is now receiving considerable attention. As the author indicates, such services developed out of the attempt to combat poverty in contrast to public health work, which had its origin in the endeavor to control pestilence.

Part I is a review of the kind and extent of public medical services. Four major types are discussed: 1. General medical care as a governmental responsibility for dependent persons (indigents and near-indigents). 2. Governmental hospital care for dependent and other persons (general and acute diseases, mental and tuberculous patients, and tax supported care in nongovernmental hospitals and clinics). 3. Medical services for special groups (soldiers, sailors, marines, veterans, Indians, prison inmates and college students) and for special rural areas. 4. Medical care for dependent and other persons afflicted with diseases or conditions bearing a public health interest (communicable diseases and other than communicable diseases, such as school medical inspection, baby clinics, maternity services, cancer, heart diseases and pneumonia). The information and statistics gathered on these topics are not exhaustive but do serve to outline the trends and problems in public medical services.

In part II, Summary and Comments, the development of public medical services is pictured as a broadening of the social base "from the concept of dependency to the concept of need" and a broadening of the medical base to a recognition of more diseases "as infused with a public health interest." The causes for the widening in the scope of public medical services are stated to be "(*a*) the public interest in dependency; (*b*) the public threat of diseases; (*c*) the costliness of diagnosis and treatment."

Despite the growth in the amount of medical services in governmental hospitals and institutions, the author recognizes the increasing importance of personal medical care. Both for medical and for economic reasons the care of the indigent, the rehabilitation of the mentally ill and the treatment of tuberculous patients are returning to a person or "home" service basis as contrasted with custodial care. It is also noted that there is "an increasing emphasis upon the medical, as distinguished from the charitable, aspect." It follows that increased responsibility is being placed on physicians in the expenditure of governmental funds for public medical services.

The amount of public medical services is estimated at between $400,000,000 and $500,000,000, or about one seventh of the total bill for all forms of medical care. The development of this extensive public medical service has not been based on any general policy and as a result has been largely haphazard and lacking in coordination. Primary problems in the administration of such a service have to do with quality, adequacy and economy of the intended service. New projects for public medical service to meet some reported need often ignore these primary problems and consider only the costs of the service in relation to available revenue. The author states that "probably the most important single factor in maintaining and improving the quality of service is professional participation in determining the qualifications and appointment of professional personnel and in controlling the procedures through which professional service is furnished."

The three major problems of relationship in the organization and administration of public medical services are "(1) the relations between physicians and patient, (2) the privileges and status of the patient in relation to public medical services, and (3) the relation of the governmental authority to the medical and allied professions." With regard to these problems it is noted that "a relation of mutual confidence between patient and physician is essential," that the extension of public medical services varies with localities and with the type of service supplied, and that "the freedom of the professions and their control of professional standards and procedures is vital to the care and promotion of health."

The author has expressed in this publication a more tolerant attitude than in some of his previous writings toward the medical profession as the qualified agency to maintain and advance the quality and adequacy of medical services.

Le venin des araignées. Par J. Vellard. Préface du Professeur Caullery. Paper. Price, 45 francs. Pp. 311, with 63 illustrations. Paris: Masson & Cie, 1936.

This monograph, from the Pasteur Institute of Paris, is written by a physician-naturalist who has traveled extensively in the wilds of South America, has been associated with the Institut antiophidique de Butantan at São Paulo, Brazil, and has prepared antivenomous monovalent and polyvalent serums against the principal poisonous spiders of South America. The book is a comprehensive treatment of the subject based mainly on the author's experience with South American species. It is divided into three major parts. The first is a history of aranéisme, beginning with Aristotle and Pliny, and includes a discussion of tarantulism. The Spanish dance, the tarantella, had its origin in an epidemic collective neurosis, derivable from the convulsive symptoms and cries of patients suffering from the bites of the tarantula (Lycosa tarantula). The more accurate accounts of this disorder led the author to the opinion that the larger and better known tarantula got all the credit for tarantulism, whereas a definite part of the symptoms observed were in reality attributable to the smaller, less often observed Latrodectus 13-guttatus, the European analogue of our black widow spider. There is a brief discussion of the poisonous spiders of Australia, New Zealand, Madagascar, Africa and Asia, of the structure of the poison glands and their ducts, of the mechanism of injection of the venom, and of the use of the venom in the capture of insects used as food by spiders in general. The author gives a full account of the physicochemical properties of the venoms of spiders, of their toxic, gangrenous, hemolytic, coagulative and proteolytic action, and of the relation of these properties to the types of alimentation of spiders. The bodies of adult spiders and their eggs when macerated and extracted yield additional hemolysins and proteolytic ferments. Their own blood contains toxic substances, their salivary glands a highly proteolytic ferment, and the hairs on their body an urticating substance. The second part contains an exhaustive study of the classification, structure and habits of the many dangerous spiders of South America, with clinical observations on the effects of their venoms on experimental animals and man.

The major interest for physicians in this country attaches to the notorious black widow spider, Latrodectus mactans, which is widely distributed throughout the United States and extends south as far as Patagonia. The effects of its bite are severe and sometimes fatal. Clinical observations in reputed human cases coincide with those in controlled experimental cases in man and experimental animals. The symptoms begin with local pain, later becoming general and more severe, delirium, perspiration, salivation, vesicular and intestinal paralysis, cutaneous hyperesthesia, muscular pains, trembling, convulsions and intellectual fatigue and are followed by weeks of slow convalescence. In fatal cases death ensues in from twenty-four to forty-eight hours. Necrosis at the site of the bite does not occur as in bites of some other spiders. The black widow is found in shrubbery, among the bases of plants, in rubbish and in outhouses, especially privies. A number of cases of bites on the penis have been recorded. The Eurasian Latrodectus 13-guttatus causes extensive losses among camels (32 per cent), horses (16 per cent) and sheep (12 per cent), with a death rate of 4 per cent in man at times of great abundance of this species in Asiatic Russia. As in the case of many insects, spiders exhibit the phenomenon of recurrent waves of great abundance. Recent reports of widespread occurrence of the black widow spider in various parts of the United States suggest such a wave in this country of this species.

The author has prepared for distribution from the Institute of Butantan serums for treatment of persons bitten by certain poisonous spiders. A single subcutaneous injection of the appropriate serum is sufficient to arrest the intoxication in man and also to prevent necrosis after bites by Lycosa. There is a high degree of specificity in the antiaraneidan serums.

A Workbook in Health for High School Girls. By Gladys B. Gogle, M.S. Paper. Price, $1. Pp. 267. New York: A. S. Barnes & Company, Incorporated, 1937.

This health workbook is one of many devised for similar purposes; namely, to make health attractive to those who have a reasonable share of it. One wonders whether the author really expects to make health attractive to the adolescent girl by putting greatest stress on the teaching of health during the first three days of the menstrual period or by giving to health a grudging few minutes of the time of the physical educator "while the gymnasium class is dressing," and a few more at the end of the gymnasium period "when the gymnasium class is again dressing." Moreover, she says "Ideally, the school arranges for a health examination for each pupil once a year. When it is impossible to do this, the pupils may be educated to have the family physician make a careful examination." Ideally it is quite the other way around. The proposal advanced by the author is neither good health procedure nor good education; it teaches the student to depend on some one else first for the initiative toward health examinations and to be self reliant only as a second choice. It should be said, however, that the author is not alone in this but follows common practice, which has been allowed to gain a firm foothold in many instances by the failure of physicians to cooperate with school authorities in making examinations promptly and recording them according to prescribed instructions, when offered the opportunity. The health charts in the workbook, while complicated and voluminous, and therefore discouraging to those for whom health is to be made attractive, are for the most part sound. One notes, however, as a good health habit "my breakfast always contains fruit and whole-grain cereal . . ."; some girls should not have both every morning, and some should never eat whole-grain cereals at all. In the same list (health chart 1) are the following items, which would have been modified if the consensus of medical opinion had been followed: "each day I have one or more . . . elimination of waste . . . from the intestinal tract without use of a laxative" (some persons naturally eliminate only once in thirty-six hours or more and are healthy); "I drink at least 3 glasses of milk" (when eating a full diet this is not always possible or desirable); "each day I take a full bath" (some skins will not tolerate this); "each morning I take a cold bath" (there are some who should never take cold baths). The human body is so variable, and rules are so difficult to formulate, that the wiser teachers are now abandoning hard and fast rules for health. There are so many exceptions that students with alert powers of observation will not be influenced as intended, because they will see for themselves that some of these things just are not so. The chapters on the menstrual period, on teeth, on food and on the problem of clothing are good. The units on advertised medicines are excellent, with a well considered appeal to the girl's own judgment on the basis of material selected from authoritative sources, in which it is gratifying to note that the American Medical Association is prominently mentioned. On the whole, this should be a useful book in the hands of a teacher who can inspire her students, but she will need more time than the intervals when there is nothing better to do or the days when the girl student menstruates.

Die Nomina anatomica des Jahres 1895 (B. N. A.) nach der Buchstabenreihe geordnet und gegenübergestellt den Nomina anatomica des Jahres 1935 (I. N. A.). Von Dr. Fr. Kopsch. Boards. Price, 2.50 marks. Pp. 103. Leipzig: Georg Thieme, 1937.

The aim of this book is to enable anatomists, students and physicians to become more familiar with the revised Nomina anatomica. The original list of anatomic names authorized by the Anatomische Gesellschaft at its Basel meeting (1895) was an enormous improvement over the previously existing chaos. It was not even then, however, a perfect list. It has been revised by committees appointed by the Anatomische Gesellschaft, of which Dr. Ross Harrison of Yale was recently president, in cooperation with the anatomic societies of Great Britain and Ireland, the American Association of Anatomists, and representative anatomists from France and Italy. The new list (Jena Nomina anatomica, I. N. A.) reduces the number of terms from 5,291 to 5,124. Changes have been made to bring human nomenclature into conformity with that of comparative anatomy. The terms cranialis and caudalis are frequently substituted for superior and inferior; ventral and dorsal for anterior and posterior. Names of individuals are entirely omitted. Some new names were necessitated by discoveries. On philologic grounds some names have been slightly modified; for example, articulus for articulatio, fibularis for peronaeus, and pharyngicus for pharyngeus. Dr. Kopsch has arranged the names of the B. N. A. and those of the I. N. A. side by side, in alphabetical order. In the I. N. A. list he has marked with one, two or three asterisks all the changes that have been made—the greater the change, the greater the number of asterisks. This will be of considerable convenience to anatomists and students who are seeking to become familiar with the revised nomenclature. The changes are for the most part a decided improvement. Undoubtedly they will be generally adopted, and when the new nomenclature appears in the editions of the atlases of Spalteholz, Toldt and Sobotta and in the newer textbooks of anatomy, they will pass into current use as easily as did those of the B. N. A. forty years ago.

Allgemeine Elektrokardiographie. Von Professor Dr. Eberhard Koch, Vorstand der Abteilung für experimentelle Pathologie und Therapie des Kerckhoff-Herzforschungs-Institutes zu Bad Nauheim. Mit einem Anhang: Wie analysiert und beschreibt man zweckmässig ein Ekg? Von Dr. Elsbeth Koch-Momm, Bad Nauheim. Second edition. Boards. Price, 3 marks. Pp. 40, with 37 illustrations. Dresden & Leipzig: Theodor Steinkopff, 1937.

This pamphlet is an attempt to present the physiologic and physical background of electrocardiography in elementary language. This is accomplished by correlating the text with well chosen illustrations. It should help the medical student and general practitioner to obtain a clear idea of the theory behind electrocardiography, provided he can rid himself of the mental hazard which so many students have who enter this field. The presentation is of necessity dogmatic, and yet the majority of authorities will find little to take exception to. The appendix on the manner in which to analyze and describe the electrocardiogram is out of place and should have been omitted. It can serve no useful purpose for the student who has no previous knowledge of electrocardiography, for whom the pamphlet was written, and is too sketchy for the experienced. Many of the illustrations are refreshingly different from those in monographs covering this subject and should interest more experienced electrocardiographers.

Sexual Power. By Chester Tilton Stone, M.D., Clinical Assistant Surgeon in the Urological Department, Bellevue Hospital, New York. Cloth. Price, $1.50. Pp. 172, with 7 illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1937.

The advertisement for this book states that it is "a book on sex written primarily to help men understand fully the factors which determine male sex efficiency." In other words it is a book intended for the public, and it is therefore not surprising that it contains no new scientific matter and that whatever scientific material it contains can readily be found in the standard works on the subject. But even as a book for the general public, it has marked and serious defects. How, for instance, is an ordinary nonmedical mortal supposed to understand that the brain center sends impulses to the erection center in the spinal cord, and that this in turn sends impulses to the arteries and muscular structures in the penis? The book is full of statements of this kind, and the occasional illustrations do not help matters much. Aside from all this, some of the statements are misleading and the advice given may even be harmful. In one paragraph, for instance, the author obviously confuses impotence with sterility. He makes the statement that after epididymitis, both vasa may be obstructed and that in such cases the result is the same as castration, whereas it is well known that the obstruction of both vasa will cause sterility but has no bearing on sexual power in the vast majority of cases. In fact, the Steinach operation does this very thing on one or both sides with the avowed purpose of improving sexual power. As a result of misleading statements that have long since been disproved, the author makes really harmful deductions. Among these may be mentioned his statement that "absolute continence is so rare that with few exceptions it only applies to the impotent; to chronic onanists—masturbators—and to inverts." Again, he repeats the long forgotten fallacy that the sexual glands and muscles need regular exercise to prevent them from becoming disabled. The following statements

in the book are exceedingly dangerous and might be used by many readers as an excuse for sexual immorality: "It is just as much a woman's privilege, however, to enter a life of sexual freedom if she feels so inclined after considering the consequences." Again: "If, in such a case, the woman does not care for the sex act and submits to it reluctantly at rare intervals, the man is fully justified in seeking extramarital relations, if he can do so without causing those at home to suffer." The book is full of generalities, conflicts and psychoanalytic statements and, in the majority of cases, fails to state the remedy. Too much stress is laid on the emotional side and too little on the influence of the prostate and other sexual organs as causes of impotence.

Lehrbuch der röntgenologischen Differentialdiagnostik der Erkrankungen der Bauchorgane. Von Dr. med. habil. Werner Teschendorf, Chefarzt des Strahleninstituts der allgemeinen Ortskrankenkasse Köln. Paper. Price, 42 marks. Pp. 477, with 929 illustrations. Leipzag: Georg Thieme, 1937.

The excellent book by Matthes on the differential diagnosis of the internal diseases inspired his pupil Teschendorf to write a roentgenologic differential diagnosis, since the roentgenologic aspect was neglected in the Matthes work. This treatise should serve as a supplement to Matthes's textbook. In general, by differential diagnosis is meant the consideration of all pathologic changes that will help to explain the symptom complex and arrive at a final diagnosis. Teschendorf, however, insists on the use of x-ray examination exclusively, from which considerable difficulties must result. One should expect from the roentgenologic method that a differential diagnosis which follows morphologic and topographico-anatomic aspects would be successfully discussed. The various applications of contrast mediums as used for the examination of the stomach, colon, kidney and gallbladder may be helpful for this purpose. Also the concretions as far as they can be visualized within the abdomen may guide our diagnostic efforts. Combined examinations of different organs, furthermore, assist in establishing the differential diagnosis. These investigations are necessary for a correct interpretation of a roentgenologic differential diagnosis. Teschendorf's book, however, can be considered as an attempt only in spite of the abundant material. The author has not succeeded in solving the problem of a roentgenologic differential diagnosis of the diseases of the abdominal organs. In spite of the misinterpretation of the subject, the book is stimulating because of the abundant material. The work has to be considered as a textbook of roentgenologic diagnosis of the abdominal organs and only as such is it of value.

Diagnóstico anátomo-topográfico de la obstrucción arterial coronaria. Por el Doctor Guillermo A. Bosco, profesor adjunto de semiología y clínica propedéutica en la Facultad de ciencias médicas de la Universidad Nacional de Buenos Aires. Paper. Pp. 755, with 245 illustrations. Buenos Aires: Artes Gráficas Modernas, 1935.

This bulky work, devoted to an important subject, is divided into three parts: (1) anatomic description of the coronary arterial system, (2) graphic representation of the coronary arterial system and (3) symptoms and topographic signs of coronary arterial obstruction. The author believes that he has solved one of the most difficult problems of diagnostic medicine. He refers to recognition of the site of the necrosis of the myocardium in acute coronary obstruction. Clinically this is not easily established by the present diagnostic means. The first investigators of the subject of this work relied too much on the electrocardiogram for localizing the site of myocardial infarcts; it finally developed that the fibrous plaque was a sequel of the ventricular parietal cicatrix and that the electrocardiographic tracing does not pursue the same curve in all cases of parietal necrosis of the myocardium, even in the same patient, during the short or long period of anatomic-clinical evolution of the anatomic alteration. Due credit is given Barnes, Whitten, Bell and Pardee for work done in this country. The illustrations are reproductions of photographs, line and wash drawings, and roentgenograms of anatomic specimens after injection of the arteries with opaque material. The author has made a detailed study, the results of which ought to be of value to all physicians interested in the heart from the clinical, radiologic and pathologic points of view. The author believes that his studies have proved the establishment of new myocardial zones nourished by coronary branches which until the present have not been mentioned. He suggests that the left coronary artery marks out three myocardial regions which correspond to the anterior descending branch, to the diagonal of the left ventricle, and to the left circumflex, sometimes called the left auriculoventricular branch.

Anatomy of the Fetal Pig. By John G. Sinclair, M.S., Ph.D., Professor of Histology and Embryology, the University of Texas Medical School, Galveston, Texas. Paper. Price, $2. Pp. 80, with 51 illustrations. Ames, Iowa: Collegiate Press, Inc., 1936.

The full term pig fetus offers many advantages as the mammalian type for study in comparative anatomy and its use has spread widely in recent years. The present dissection manual is timely and adequate, giving a good account of the important features characteristic of mammalian anatomy. It is stated that the work outlined can be done in thirty laboratory hours, but the mass of detail presented could hardly be mastered in so brief a time. The plan of work is particularly adapted to the needs of the premedical student and there are frequent comparisons between the pig and man. The anatomic description of each system is included with the instructions for dissection and is illustrated with line drawings, which are for the most part excellent. Where clarity has been sacrificed in favor of detail, the student can remedy the situation by coloring the figures with crayons. In most cases the structures are labeled directly and in full, so that there is no annoying legend to decipher. There are tables of muscles into which the student may insert the function of each muscle.

The description of each system of organs is followed by an "interpretation"; i. e., a brief statement of its fundamental morphology and physiologic significance. This is an especially valuable feature in spite of the occasional unavoidable inaccuracy. On page 80, for example, it is stated that the nerve impulse is an "electrical impulse." The details presented in this section on the nervous system are far beyond the scope of a course in comparative anatomy. As they stand, they would not be adequate for even a brief elementary course in neurology. The introductory embryologic chapter dealing primarily with placentation is followed by accounts of the various systems, beginning with the external form and the skin and ending with the nervous system. The lymphatic system is not mentioned, and the consideration of the reproductive system is necessarily superficial. In the "interpretation" of the latter system a section of the text appears to have been inadvertently omitted by the printer. While the embryologic point of view is an important feature of the whole presentation, there are some lapses which create false impressions and introduce inconsistencies in the text. Thus the optic "nerve" is said to "enter" the retina, and the fila olfactoria are described as "extensions of the olfactory lobe."

Kurzwellentherapie in der Praxis. Von Dr. Ernst Raab. Mit einem Vorwort von Prof. Dr. Erwin Schliephake. Boards. Price, 5.80 marks. Pp. 173, with 97 illustrations. Leipzig: Georg Thieme, 1937.

Although there is no dearth of monographs on short wave diathermy, the present small and inexpensive volume is in many respects a worthy addition to the literature. Raab fully realizes that the early overenthusiasm has led to many disappointments and that a number of theoretical concepts have been erroneous. He has sifted facts from fancy on the basis of his own extensive clinical experience, and while he has made extensive use of the literature—he includes 149 articles and monographs in the bibliography—he has accepted nothing as granted. Moot problems, such as the selectivity of certain wavelengths for special tissues, have been treated objectively and conservatively. He stresses the need for thorough familiarity with the underlying biophysical fundamentals, which he presents in the first sixty-two pages. To be clinically successful, the method must be applied intelligently in the sense of proper indications, dosage, selection of electrodes and their technics of application. The bulk of the book is devoted to therapy, the diverse diseases having been grouped both regionally and according to their pathologic similarity. Electropyrexia is considered separately at the conclusion of the clinical part and is properly evaluated. The text proper is concluded with a brief critical review in which the author endeavors to show that different results by various observers are ascribable

to differences in technic, the latter being the sine qua non for success of a method that has been applied too often in haphazard fashion. A good index enhances the well prepared table of contents. The book may safely be accepted as a reliable guide to short wave treatment of the many disorders in which modern thermotherapy is indicated.

Les spasmes de la face et leur traitement. Par Th. Alajouanine et R. Thurel. Paper. Price, 12 francs. Pp. 88. Paris: Masson & Cie, 1936.

This monograph describes briefly and concisely the varieties, nature and origin of facial spasm. The tics are divided into two groups, depending on whether the irritative focus is peripheral or central. This differential diagnosis can be made by a morphologic analysis of the muscle groups that enter into the spasmodic movement. A spasm due to peripheral involvement of the facial nerve involves only the muscles innervated by that nerve. A spasm of central origin may include movements of muscles supplied by nerves other than the facial. Facial spasm due to involvement of the facial nerve is caused by a focus of irritation affecting this nerve after its emergence from the brain stem. Not infrequently voluntary twitching occurs during recovery from a paralysis of the facial muscles (Bell's palsy). Otitis media, a cerebellopontile angle tumor, and vascular, neoplastic or infectious lesions along the course of the nerve may result in a facial spasm. Occasionally, for want of a better explanation, an intrinsic irritative factor in the nerve itself can apparently produce the same result. The only effective treatment in the relief of such a spasm is the injection with alcohol of the peripheral branches of the facial nerve that run to the muscles involved. The causes for central irritation of the facial musculature are less clear. A facial spasm often accompanies the severe, lancinating pain of major trigeminal neuralgia, undoubtedly an involuntary response to the painful stimulus. Spasmodic movements of the face following almost reflexly on certain stimuli may be due to constant repetition of certain facial movements as seen in actors or mimics. Jacksonian convulsive movements due to cortical irritation often involve the facial musculature. Rhythmic myoclonic movements of the face, which not only include the face itself but also the eyes, palate, pharynx and larynx, not infrequently extending to the arms, follow a lesion in the olivary or dentate nuclei. Finally the lesions of a postencephalitic syndrome produce a well defined quivering of the lips or cheeks, while much more rarely choreic or athetotic facial movements are seen, usually in conjunction with similar involuntary purposeless movements of the extremities. A fairly complete bibliography is appended to this monograph. While adding nothing new to our knowledge of the various types of facial spasm, what is known is concisely described without undue speculation as to the underlying physiopathologic mechanism.

Life Saving and Water Safety. Prepared by the American Red Cross. Cloth. Price, 60 cents. Pp. 267, with 141 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1937.

This is an excellent and timely release. As its title indicates, it covers the water-front from the angles of life saving and safety. The coverage is complete, concise, clear, fully illustrated, and free from notions or unsupported theories. It gives full and common sense reasons for the commonly repeated and uncommonly respected rules about not swimming alone, about not swimming too soon after meals, and about sensible precautions to take when swimming at night. It deals with personal safety in swimming, bathing places (including the old swimmin' hole) and what they ought and ought not to be like, safety and self rescue in the use of small craft, drowning and elementary forms of rescue, swimming rescues and how to avoid being a second victim instead of a rescuer, recovering a submerged victim, resuscitation, special forms of rescue, and ice accidents (prevention and rescue). The full and clear descriptions, with accompanying illustrations, of the various procedures involved, especially in handling small craft, in rescues and in resuscitation, should be of inestimable service to instructors and supervisors of life-guards, to boys' and girls' camp directors and workers, to emergency crews in industry (a growing group), and to physicians who may be called on not only for medical treatment but for cooperation in rescue work. This book should take its place beside the Red Cross Manual on First Aid, as a standard reference and textbook in its field.

Nogle Undersøgelser over Widalreaktionen ved Tyfus og Paratyfus. Af Chresten Faarup. [Studies on Widal Reaction in Typhoid and Paratyphoid.] (With an English summary.) Paper. Price, 8 d. Kr. Pp. 191. Copenhagen: Levin & Munksgaard, 1937.

This dissertation for the degree of doctor of medicine at the University of Copenhagen describes in detail the author's observation on specific agglutination in typhoid paratyphoid fevers, with special reference to H and O agglutinins. It will be recalled that H, or flagellar, agglutinin reacts with motile bacilli and gives rise to a floccular, large flake agglutinate, while the O, or somatic, agglutinin reacts with nonmotile forms and gives rise to a granular, small flake agglutinate. To secure the most reliable results, tests should be made for both H and O agglutinins. The dissertation, which is in Danish with an English summary, will be of value to workers with typhoid and paratyphoid agglutinations.

Der klinische Blick. Von Dr. Erwin Risak, Privatdozent für innere Medizin der Universität zu Wien. Paper. Price, 4.80 marks. Pp. 154. Vienna: Julius Springer, 1937.

This booklet attempts to outline to the medical student in a brief manner some fundamental bedside observations. Clinical impressions to be gained by the eye, ear and nose are recorded and illustrated by practical examples. Some of the author's statements may be criticized. For instance: the doctor should observe the manner in which his female patient is disrobing. If she does it in a modest way, she is not seriously ill. If she does it in a shameless way, she is gravely ill. As a whole, however, the book fulfils the purpose for which it was written. It does not record original observations but offers to the student an evaluation of impressions gained at the patient's bedside.

Nutritive Aspects of Canned Foods: A Bibliography of Scientific Reports, and Helpful Tables of Food Data. Compiled by the Nutrition Laboratory, Research Department of the American Can Company. Cloth. Pp. 110, with illustrations. New York: American Can Company, 1937.

The canning of foods began more than a hundred years ago as a result of the need by Napoleon to preserve food for his armies. Today the canning of foods is an enormous peace time industry, but textbooks on nutrition have largely neglected to discuss the nutritional significance of these products. This little volume contains information about the human dietary requirements and on the nutritional, bacteriologic and other public health aspects of canned foods. There are interesting chapters on the manufacture of cans and the various canning procedures. The appendix provides information in tabular form about the chemical composition and dietary value of canned foods. A selected bibliography is appended.

Digitalisfibel für den Arzt. Von Prof. Dr. Ernst Edens. Paper. Price, 1.80 marks. Pp. 39. Berlin: Julius Springer, 1937.

The primer gives a sketchy history of the digitalis bodies (six pages), an equally sketchy discussion of their chemistry and pharmacology (seven pages), a discussion of their clinical use, and emphasizing especially the use of strophanthin in certain conditions. Those who are familiar with efforts to popularize the routine intravenous use of strophanthin are acquainted with the work of Edens and Fraenkel, who recommend the use of strophanthin in many conditions in which digitalis is preferable. It is nevertheless surprising to find no less than twenty references to the papers of these two authors in this booklet. It is not probable that this primer will serve any useful purpose in promoting the scientific treatment of cardiac disease.

Études sur les maladies de l'enfance. Par A.-B. Marfan, professeur honoraire à la Faculté de médecine de Paris. Paper. Price, 30 francs. Pp. 191 with 6 illustrations. Paris: Masson & Cie, 1936.

This book consists of clinical essays, each about twenty pages in length, on scrofula, rickets, lymphatism, intermittent albuminuria, headache of school children, involuntary defecation, spasmodic paraplegia, varicella, pericardial puncture, and extubation. The discussions are mainly clinical and are based on the writer's experience. Throughout the book, more than in most American writings, greater emphasis is laid on syphilis and tuberculosis as etiologic factors. Some of the author's hypothesis are not widely known in this country. He believes that infections are important in the causation of rickets. He

feels that the value of the ergosterol in our tissues lies in overcoming chronic infections when it is activated by sunlight. Intermittent albuminuria, although frequently postural, has its real origin in a mild kidney infection which has healed but left the kidney with slight functional damage. For the mature pediatrician, the excellent clinical descriptions and observations make stimulating reading. The book can well be read by any one wishing succinct clinical lectures by an authority of another land.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Dental Practice Acts: Injunction to Restrain Enforcement of Legislative Ban on Advertising.—The plaintiff, a licensed dentist, owned and operated a chain of dental offices in Iowa. In connection therewith, he advertised extensively in the newspapers. In 1935 the legislature of Iowa forbade all advertising by dentists other than the use of professional cards and window or street signs at the licensees' places of business. The plaintiff thereafter instituted proceedings against the state commissioner of health and others to enjoin the enforcement of the ban on advertising. The trial court dismissed the plaintiff's petition and he appealed to the Supreme Court of Iowa.

The appellant did not apparently question the right of the state, under the police power, reasonably to regulate the practice of dentistry but urged strenuously that the legislation must bear a fair relation to the public health, morals, safety or general welfare of the people, and that so long as there is nothing untruthful in advertising matter the public welfare is not adversely affected. He contended, further, that the legislature, in attempting to regulate the practice of dentistry, had destroyed his right to practice. But, the court said, the restrictions placed on advertising have the sanction of the dental profession as a whole. They are intended to preserve the profession, not to destroy it. Such laws are not enacted for the benefit of any class of individuals but in the interest of the general public. In the sense that they tend to prevent an unseemly rivalry in a race for business and preserve a rational, reasonable and ethical approach to the public and aid the profession in maintaining its service on a high plane of efficiency, such laws may be said to be beneficial to the profession as a whole. But this is not the primary purpose of the law. It is but one of the beneficial and beneficent fruits of the law. By making unlawful all methods of advertising calculated to bait or allure the public, the quack, the charlatan and the exploiter are deprived of any means of plying their art. Likewise the member of the profession who would seek to commercialize it by boosting himself through extensive use of methods of publicity, extolling the superiority of his services, thereby forcing his competitors into a race for business, to the demoralization of the high standards and established ethics of the profession—all of which worketh ill to the public—is successfully thwarted in his purpose. It is true, said the Supreme Court, that the authorities are not uniform in relation to this matter of truthful advertising, and many of the earlier cases may be cited to the effect that legislation of this character can only be directed toward eliminating advertising which is false and fraudulent and intended to deceive the public. More recent cases, however, seem to go deeper into the philosophy and purpose of such legislation.

The experience of mankind, said the court, has shown that human greed and avarice, untrammeled and uncontrolled by law, will not hesitate to prey on the frailties of overcredulous human beings. Those affected by real or imaginary ills are an easy prey. The unscrupulous as well as some of the more honorable but avaricious members of the profession, in disregard of the ethics of their profession, are many times overcome by the great temptation to become rich at the expense of humanity, with all its afflictions. They have resorted to all the devices of the faker on the street corner and of the skilful artisan of expert advertising and radio propaganda, some even going beyond the borders of the United States with their broadcasting stations, where they may exploit their victims without hindrance. Such methods are demoralizing to the profession and detrimental to society. While the object of the statute is to strike at the charlatan and unscrupulous practitioner, no legislation can be upheld which would apply alone to the quack. Such legislation must be general in its application and rest alike on all members of the profession concerned. The best interests of the public demand that members of a profession affecting the public health stand or fall on the merits of their services; not on their skill in advertising.

It was for the legislature to say whether or not it was necessary that all advertising except that designated in the statute be prohibited. That is the real pith of the controversy in this case. There is no claim that in itself there is anything harmful in advertising prices for dental work or displaying signs illustrating bridgework, or running stories in the newspapers. It must, however, be admitted, said the court, that there are some dishonest and disreputable members of the profession who are not willing to abide by what is commonly called the ethics of their profession, and who make use of such methods of advertising. The unsuspecting public and overcredulous members of society, unable to distinguish the true from the false, or the honest from the dishonest, are lured to the offices or lairs of the professional charlatans, who point to their array of expensive office equipment and overstuffed furnishings to convince their unsuspecting patients of their superiority, and use this as an excuse for "fleecing them." In order to reach this evil and attempt to correct it, in the interest of the public welfare, individual rights must give way to the greater rights of the whole people. While under the Iowa statutes the limitations on advertising are rigid, they are not too rigid when the purpose or aim of the law is considered. The law, in the opinion of the court, bears a fair relation to matters of public health and the moral and physical welfare of the people.

The Supreme Court did not agree with the appellees' contention that the plaintiff had no standing in a court of equity. The enforcement of this law, the court said, will undoubtedly constitute a serious restraint on the plaintiff's prior methods of conducting a lawful vocation and will result in a financial injury. If the law is unconstitutional and void, he has a right to restrain its enforcement. He is not required to take the risk of forfeiting his license before he may proceed in equity to challenge the constitutionality of the law. It would be an unjust and arbitrary rule which would require him to proceed first openly to violate the law and thus place himself and his property rights in jeopardy in order to place himself in a position to have determined the question of the constitutionality of the statute.

While holding that the plaintiff had a right to proceed in equity, the Supreme Court was of the opinion that the decree of the trial court denying the plaintiff's petition for an injunction was correct. The decree was therefore affirmed.—*Craven v. Bierring, State Commissioner of Public Health, et al. (Iowa), 269 N. W. 801.*

Malpractice: Physician an Independent Contractor, Not an Employee of Corporation.—One of the defendants, a physician, was employed on a part time basis by the New York Telephone Company, a self insurer under the workmen's compensation act of New York, to render medical services to employees in emergency cases and to examine employees in connection with its disability benefit plan and its pension system. The plaintiff, an employee of the company, consulted the physician-defendant because of a pain in her foot. The condition, osteomyelitis, had no connection with her employment. She later sued the company and the physician, contending that because of the latter's negligent treatment she sustained injury. The trial court gave judgment against both defendants for $40,227.39 and they appealed to the supreme court of New York, appellate division.

The defendant company was held liable on the theory that the physician was the servant of the company for whose negligence it was responsible. But, said the appellate court, the doctrine of respondeat superior has no application to the facts presented by the record. A physician employed under the cir-

cumstances of this case is not a servant of his employer but is engaged in an independent calling and his status is that of an independent contractor. Furthermore, the court continued, the evidence against the physician-defendant showed, without contradiction, that the plaintiff at the time she first saw the physician had a disease condition of the bones of her foot which had existed for at least two months and which grew progressively worse thereafter. The only damage for which the physician could be held responsible was for an aggravation of the existing condition resulting from his failure to treat the plaintiff properly. This issue, however, was not presented to the jury. The only issue presented was whether the alleged malpractice of the physician was responsible for the entire condition which developed. The finding of the jury in the plaintiff's favor on this issue was, in the opinion of the appellate court, clearly against the weight of the evidence.

The judgment against the telephone company was reversed and the complaint against it dismissed. The judgment against the physician was reversed and a new trial ordered.—*Schneider v. New York Telephone Co. et al. (N. Y.), 292 N. Y. S. 399.*

Malpractice: Loss of Eye Attributed to Negligent Treatment of Gonorrheal Ophthalmia.—The plaintiff consulted the defendant, a specialist in diseases of the ear, eye, nose and throat, because of a badly infected and swollen eye. A diagnosis of gonorrheal ophthalmia was made and a course of treatment instituted. After eight days of treatment, the plaintiff consulted a specialist in another city who found the eye full of pus and badly swollen. There was a perforation of the cornea and prolapsus of the iris. Since sight from the eye was destroyed and could not be restored, this specialist removed the eyeball. Subsequently, the plaintiff sued the defendant, attributing the loss of the eye to his negligence. The trial court directed a verdict for the defendant and the plaintiff appealed to the district court of appeal, fourth district, California.

The degree of skill and care required of the defendant as a specialist, the court said, is stated succinctly in Ann. Cas. 1915D, 1124, as follows:

> One who holds himself out as a specialist in the treatment of a certain organ, injury or disease, is bound to bring to the aid of one so employing him, that degree of skill and knowledge which is ordinarily possessed by those who devote special study and attention to that particular organ, injury or disease, its diagnosis and its treatment, in the same general locality, having regard to the state of scientific knowledge at the time.

The plaintiff based his allegation of negligent treatment on the contention that the defendant failed (1) to cap the uninfected eye, (2) to hospitalize the plaintiff, (3) to take and test a smear from the infected eye and (4) to use more energetic treatment on the eye. Even if good practice required the defendant to cap the uninfected eye, the court said, that eye did not become infected and the failure to cap it was neither a proximate nor a contributing cause of any injury suffered by the plaintiff. Furthermore, there was no evidence to show that hospitalization of the plaintiff was required by the standards of good practice in and around the community. The specialist who enucleated the eyeball testified that hospitalization in such cases is desirable and that he himself did not see how a patient could properly irrigate his own eye. This fell short, in the opinion of the court, of proving that the standard of care in the particular community required hospitalization of patients suffering from gonorrheal ophthalmia. There was testimony to the effect that good practice required the defendant to take a smear from the infected eye to determine the nature of the infection and the type of treatment required, the nature of the treatment being dependent on the nature of the infection and its virulence. The defendant, however, recognized immediately the nature of the infection on his first examination. The only merit to this particular contention would depend, therefore, the court said, on the propriety and efficacy of the treatment administered by the defendant.

According to the record, the defendant, after diagnosing the condition as gonorrheal ophthalmia, irrigated and cleaned the eye, painted the lids with a 1 per cent solution of silver nitrate, and placed two drops of atropine solution in the eye. He administered this treatment daily during the eight days that the plaintiff was under his care. He also advised the plaintiff to apply ice compresses continuously, to keep the eye clean with frequent irrigations of a salt or boric acid solution, and prescribed a one-half of 1 per cent solution of zinc sulfate with directions to place two or three drops in the eye every two hours. Subsequently, the zinc sulfate solution was discontinued and a 15 to 20 per cent solution of neosilvol was substituted. The specialist who operated on the eye, testifying for the plaintiff, said: "If I were treating such a case, I would want to have more energetic treatment. In this serious disease the outcome might be grave in any event." He admitted, however, that "there is a great difference in the opinion about the use of drugs" and that each step in the treatment administered by the defendant was proper. This, in the opinion of the court, did not prove that the defendant did not bring to the case the required degree of skill and knowledge. The evidence only tended to prove that in the opinion of the witness a method of treatment other than that employed by the defendant might have produced a better result. Such evidence was not sufficient to make out a case for the plaintiff.

The judgment of the trial court for the defendant was therefore affirmed.—*Jensen v. Findley (Calif.), 62 P. (2d) 430.*

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine, Philadelphia, Oct. 19-21. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 10-15. Dr. W. P. Wherry, 107 South Seventeenth St., Omaha, Executive Secretary.

American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 9-11. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N. W., Washington, D. C., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 20-22. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Association of Railway Surgeons, Chicago, Sept. 20-22. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.

American Clinical and Climatological Association, Baltimore, Oct. 11-13. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.

American College of Surgeons, Chicago, Oct. 25-29. Dr. George W. Crile, 40 East Erie Street, Chicago, Chairman, Board of Regents.

American Congress of Physical Therapy, Cincinnati, Sept. 20-24. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.

American Hospital Association, Atlantic City, N. J., Sept. 13-18. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.

American Public Health Association, New York, Oct. 5-8. Dr. R. M. Atwater, 50 West 50th St., New York, Executive Secretary.

American Roentgen Ray Society, Chicago, Sept. 13-17. Dr. Eugene P. Pendergrass, 3400 Spruce St., Philadelphia, Secretary.

Association of American Medical Colleges, San Francisco, Oct. 24-26. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.

Association of Military Surgeons of the United States, Los Angeles, Oct. 14-16. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

Central Association of Obstetricians and Gynecologists, Dallas, Texas, Oct. 14-16. Dr. Ralph A. Reis, 104 South Michigan Blvd., Chicago, Secretary.

Clinical Orthopaedic Society, Chicago, Oct. 14-16. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 22-25. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.

Delaware, Medical Society of, Wilmington, Oct. 12-13. Dr. W. H. Speer, 917 Washington St., Wilmington, Secretary.

Indiana State Medical Association, French Lick, Oct. 4-6. Mr. T. A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, St. Louis, Oct. 18-22. Dr. W. B. Peck, 27 E. Stephenson St., Freeport, Ill., Managing Director.

Kentucky State Medical Association, Richmond, Sept. 13-16. Dr. A. T. McCormack, 532 West Main St., Louisville, Secretary.

Michigan State Medical Society, Grand Rapids, Sept. 27-30. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.

Mississippi Valley Medical Society, Quincy, Ill., Sept. 29-Oct. 1. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Nevada State Medical Association, Ely, Sept. 24-25. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 17-22. Dr. J. D. McCarthy, 107 South Seventeenth Street, Omaha, Secretary.

Oregon State Medical Society, Salem, Oct. 21-23. Dr. Morris L. Bridgeman, 1020 S. W. Taylor St., Portland, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 4-7. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Radiological Society of North America, Chicago, Sept. 13-17. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.

Vermont State Medical Society, St. Johnsbury, Oct. 14-15. Dr. A. B. Soule Jr., Mary Fletcher Hospital, Burlington, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 12-14. Miss A. V. Edwards, 1200 East Clay St., Richmond, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 14-17. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

34: 1-182 (July) 1937. Partial Index

*Eclampsia and Its Sequels: Clinical and Follow-Up Study of All Cases at Boston Lying-In Hospital Over Twenty-Year Period. H. M. Teel and D. E. Reid, Boston.—p. 12.
Primary Dysmenorrhea: Endocrine Problem. J. Kotz and Elizabeth Parker, Washington, D. C.—p. 38.
Parametrial Fixation Operation for Uterine Prolapse: Technic and Review of 254 Cases. U. J. Salmon, New York.—p. 58.
*Gonorrhea in Female Treated by Combined Heating Technic. W. Bierman and E. A. Horowitz, New York.—p. 68.
Analysis of 521 Cases of Twin Pregnancy: I. Differences in Single and Double Ovum Twinning. A. F. Guttmacher, Baltimore.—p. 76.
*Treatment of Obstructed Fallopian Tubes in Sterility by Diathermy and Tubal Insufflation. M. E. Mintz, New York.—p. 93.
Granulosa Cell Carcinoma of Ovary in a Child of Three Years and Nine Months. M. X. Anderson and E. A. Sheldon, Los Angeles.—p. 119.
True Hermaphroditism in Man, with an Endocrinologic Study. R. R. Huggins, M. Cohen and B. Harden, Pittsburgh.—p. 136.
Uses and Limitations of Roentgen Pelvimetry. H. Thoms, New Haven, Conn.—p. 150.
Missed Abortion: Hematoma Mole. E. C. Sage, Omaha.—p. 163.
Atelectasis as Complication of Obstetric Analgesia. G. R. Cheatham, Endicott, N. Y.—p. 166.
Incidence of Trichomonas Vaginalis Infections. S. B. Potter, Denver.—p. 169.

Eclampsia and Its Sequels.—Teel and Reid present a study of 173 patients with eclampsia who were treated at the Boston Lying-In Hospital from 1915 through 1934. The uncorrected mortality was 26.6 per cent. The mortality for patients who had attended the clinic prior to the development of eclampsia was less than for those admitted as an emergency measure. The mortality was higher in multiparas than in primiparas and was also higher in patients more than 30 years of age. Of the 127 survivors of eclampsia, eight have subsequently died; three of recurrent pregnancy toxemias, two of severe hypertension with cerebral lesions, one of cardiac decompensation, one of lobar pneumonia complicated by hypertension and possibly chronic nephritis, and one of cancer of the cervix. In eighty patients who survived the eclampsia and who have been followed for more than from one to twenty-one years (average 7.6 years) the incidence of hypertension was 27.5 per cent and the incidence of albuminuria 8.75 per cent. Evidence of significantly impaired renal function was found in only one case. A significant number of these patients had hypertensive disease or nephritis prior to the eclampsia, and both the immediate and the remote outlook for them was considerably poorer than for those known to have been normal before the eclampsia. In the twenty-nine patients followed who were known to have been healthy prior to the eclampsia, the incidence of subsequent hypertension was 10.3 per cent and that of albuminuria was nil. Such symptoms as were encountered at follow-up examination were largely explicable on the basis of hypertensive disease.

Gonorrhea in Female Treated by Combined Heating Technic.—The procedure that Bierman and Horowitz now follow in the treatment of gonorrhea in women is first to elevate the systemic temperature by short wave currents while the patient lies in a cabinet heated by electric lamps. After the systemic temperature has been elevated to about 106 F., they apply the additional local heating to the pelvis, principally by means of diathermy, supplemented for an hour or two by ultrashort waves. At the same time the systemic temperature is maintained at its elevated level. The treatment (121 cases during the last six years) is strenuous and not without danger. It is a hospital procedure. Adequate apparatus, trained personnel and continuous watchfulness are necessary. Physically induced fever is combined for six hours with pelvic diathermy and for two hours with pelvic short waves, so as to produce a vaginal temperature of about 109 to 110 F., while the body temperature is held between 105.5 and 106.5 F. and continued for a period of about twelve hours. While usually from one to three such treatments may be required to eradicate all gonococci, the average number found to be necessary in the authors' last series of fifty-four patients was 1.4 per patient.

Treatment of Obstructed Fallopian Tubes in Sterility.—Mintz finds that diathermy treatment combined with insufflation exerts a reparative influence on some chronically diseased tubes, leading to the restoration of patency, and is followed by pregnancy in many instances. The beneficial effects of diathermy are produced by the action of heat. The heat is generated by a high frequency current passing through the tissues between two metal electrodes, the greatest concentration of heat being near the smaller electrode. Of the forty-four patients treated, patency was reestablished to some degree in twenty-five, nine of whom became pregnant and gave birth to normal children. Ectopic pregnancy occurred in two patients, necessitating operation. In fourteen instances no pregnancies have been noted as yet. Each patient received diathermy treatments from one to three times a week, the total ranging from fifteen to fifty-nine treatments. Each treatment lasted from thirty to forty-five minutes, and from 2,500 to 3,000 milliamperes of current with the abdominal and sacral electrodes was used. When the abdominal and vaginal electrodes were used, the current employed was from 2,000 to 2,500 milliamperes. The electrodes were a concave vaginal electrode, and for the abdomen and sacrum ordinary Cook's malleable tin metal, 5 by 8 inches long, 22 gage.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

37: 721-866 (June) 1937

Roentgen Kymography of Respiratory Movements of Thorax, Diaphragm, Lungs, Bronchi and Mediastinal Structures. W. G. Scott and S. Moore, St. Louis.—p. 721.
Inflammatory Diverticula of Pericardium (Encapsulated Pericardial Effusion). E. Freedman, Cleveland.—p. 733.
*Roentgenologic Diagnosis of Cardiac Compression Due to Pericardial Scar (Adhesive Pericarditis). E. Freedman, Cleveland.—p. 739.
Obstruction at Ureteropelvic Junction Due to Aberrant Blood Vessels. C. A. Waters, Baltimore.—p. 756.
Roentgen Studies of Shoulder. C. W. Blackett and T. R. Healy, Boston.—p. 760.
Posterior Subacromial Dislocation of Head of Humerus. M. A. Thomas, Cleveland.—p. 767.
Osteopathia Condensans Disseminata "Spotted Bones": Report of Case. J. M. Lowrey and J. H. R. Booth, Baltimore.—p. 774.
Nonparasitic Cyst of Spleen, with Especial Reference to Roentgenologic Aid in Diagnosis. M. Ostro and H. B. Makover, Baltimore.—p. 782.
"Phrygian Cap" Deformity of the Gallbladder. W. H. Meyer, R. F. Carter and L. H. Meeker, New York.—p. 786.
Care of the Cancer Patient. E. E. Downs, H. Wammock and R. T. Artman, Philadelphia.—p. 790.
*Changes in Lungs and Pleura Following Irradiation of Extrathoracic Tumors. C. K. Hsieh and H. T. Kimm, Peiping, China.—p. 802.
Spatial Distribution of Radiation from Supervoltage Roentgen Tube and Its Significance in Therapy. K. E. Corrigan and B. Cassen, Detroit.—p. 811.

Roentgenologic Diagnosis of Cardiac Compression.—Freedman points out that the roentgen diagnosis of cardiac compression due to pericardial scar tissue formation is made by the utilization of several signs, the most conclusive of which is the pericardial calcification. Aside from the latter, only the finding of several of the individual signs justifies one in making an unequivocal diagnosis. The roentgenoscopic examination is of greater importance than the roentgenographic because important respiratory changes in the position and configuration of the heart and diaphragm can be elicited with ease. The knowledge of the clinical history is important, because it leads to a search for some of the signs which are not obvious and have to be elicited. One of the most important signs is the marked discrepancy between the clinical symptoms of cardiac decompensation and the absolutely or relatively small shadow of the heart. A marked enlargement of the cardiopericardial shadow is rare. The cardiac configuration is variable. The triangular heart is common, while others show an abnormal bulging on either the left or right contour. The cardiac pulsations are abnormal. They are either diminished in amplitude or absent throughout the entire heart or throughout certain sections as seen by roentgenoscopy and by kymographic studies. Similarly, abnormal pulsations can be found in pericardial effusions and in cases of decompensation due to cardiac dilatation. However, the compressed heart is rarely large enough to suggest

either of these two conditions. The lack of plasticity and the presence of fixation of the heart are determined by examination during the inspiratory and expiratory stage with the patient in the erect postero-anterior and lateral positions and in both lateral recumbent positions in the postero-anterior direction. Calcification of the pericardium, the most conclusive single sign, is present in only the minority of cases.

Changes in Lungs and Pleura Following Irradiation.—In fifty-one consecutive patients with malignant tumors of the thoracic wall treated intensively by means of x-rays, radium and radon, Hsieh and Kimm observed that definite roentgenographic evidence of postirradiation changes was demonstrated in the lungs and pleura of twelve patients. The series included forty-seven cases of carcinoma of the breast, two cases of recurrent fibrosarcoma of the back, one case of hemangio-endothelioma of the supraclavicular region and one case of recurrent fibrosarcoma of the upper part of the wall of the chest. The postirradiation changes were all observed in patients treated for carcinoma of the breast. These changes included pleural thickening, increased lung markings, contraction of the lung and shifting of the mediastinum. The postirradiation changes were believed to be due to a late fibrous tissue reaction following a more acute congestive change, and to be comparable to the irradiation reaction which may occur elsewhere in the body. Acute congestive reactions, as evidenced by pleural effusion soon after the irradiation, were observed in two cases. Chronic pulmonary tuberculosis, the infiltrative type of pulmonary metastasis and interstitial pneumonia were considered in the different diagnosis. In all the cases in which definite changes occurred in the lungs and pleurae signs, symptoms and laboratory evidence of the foregoing diseases were not encountered.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

21: 357-474 (July) 1937

Visceral Pathology in Haitian Treponematosis. C. V. Weller, Ann Arbor, Mich.—p. 357.
Value of Present Therapeutic Methods in Control of Communicability of Gonorrhea and Suggestions for Clinical Study. P. S. Pelouze, Philadelphia.—p. 370.
*Medical Shock Following Intravenous Therapy with Neoarsphenamine: Report of Three Cases. T. Weinberg, Baltimore.—p. 376.
Oral Administration of Potassium Bismuth Tartrate in Treatment of Experimental Syphilis of Rabbits, with Note on Gastric Chemistry of Rabbits. J. A. Kolmer and H. Brown, with assistance of Anna M. Rule, Philadelphia.—p. 387.
Treatment of Syphilis with Mapharsen. L. E. Schmidt and G. G. Taylor, Chicago.—p. 402.
Modification of Eagle Flocculation Test for Syphilis. J. H. Strauss, Baltimore.—p. 406.
Studies in Cardiovascular Syphilis: III. Effect of Occupation on Incidence and Type of Syphilitic Aortitis. K. D. Cochems and J. E. Kemp, Chicago.—p. 408.
*Divided Doses of Typhoid H Antigen Vaccine in Treatment of Neurosyphilis. G. V. Kulchar, San Francisco, and L. E. Anderson, Philadelphia.—p. 413.
Results of Bilirubin Test for Liver Function on Patients Recovered from Arsphenamine Jaundice. A. D. Campbell and L. J. Soffer, Baltimore.—p. 420.

Shock Following Intravenous Neoarsphenamine.—Weinberg presents three cases of shock following intravenous therapy with neoarsphenamine. All three patients exhibited a typical clinical picture of shock. The first two patients remained in shock for about six hours each, while the third patient maintained this state for about six days. All three were admitted to the wards with impalpable peripheral pulses and unobtainable blood pressures. Patients 1 and 2 at first presented signs and symptoms characteristic of the nitritoid crisis, but none of the three responded in the least to epinephrine or similar stimulants. They did, however, respond well to the usual shock therapy, patients 1 and 3 receiving intravenous fluids, while patient 2 was treated with heat to the extremities and oxygen. Patients 1 and 2 presented marked cyanosis. All three suffered from persistent vomiting and cold sweats with cold clammy skins. Patients 2 and 3 showed marked increase in the concentration of hemoglobin and erythrocytes in the peripheral blood. The nonprotein nitrogen determination was greatly increased in patient 1 seven days after admission. All three showed an elevation in temperature during the first few days, and this, accompanied by nausea and vomiting, has been described by Boardman as in itself a characteristic sign of intolerance to arsphenamine and its derivatives. The mechanism of the production of shock in general and by the arsphenamines in particular is discussed briefly. It is suggested that arsenoxide plays a part in this toxic manifestation, but in addition there appears to be an *x* factor yet to be discovered.

Typhoid H Antigen Vaccine in Treatment of Neurosyphilis.—Kulchar and Anderson used typhoid H antigen in the treatment of thirty-eight unselected patients (nine women and twenty-nine men) with various forms of neurosyphilis. All except two patients had previously received considerable amounts of antisyphilitic treatment, and fever therapy seemed indicated because of the unsatisfactory clinical or serologic response. The H antigen suspension was prepared by adding 0.5 per cent phenol in physiologic solution of sodium chloride to a twenty-four hour broth culture of motile typhoid bacilli. On filtration the somatic (O) antigen is blocked off, resulting in a water-clear saline filtrate containing the flagellar (H) antigen. The filtrate is standardized so that each cubic centimeter contains the flagellar antigen obtained from two billion typhoid bacilli. A preliminary dose of from forty to fifty million organisms (killed bacilli equivalent) was given intravenously by means of a 26 gage hypodermic needle. Usually, but not always, a moderate chill lasting from ten to thirty minutes occurred from one to two and one-half hours after the injection, at which time the patient was closely wrapped in woolen blankets and the temperature taken every half hour until it returned to normal. Increase in temperature usually began at the time of the chill and required from two to three hours to reach its peak, which varied between 103 and 105.6 F. The temperature remained at the maximal level from one-half to one hour, following which it gradually declined, returning to normal in from six to twelve hours. The rise in temperature was accompanied by an increase in pulse rate, never above 120 per minute. Except for the feeling of warmth, the patients were fairly comfortable for the most part. Sedatives of the barbiturate series were used to control any unusual restlessness during the period of fever. The doses for subsequent injections were determined by the febrile response to the preceding dose. The increases varied from 25 to 600 million per injection. After the first day, doses were divided into two portions, the second injection of the slightly lower dosage being given as soon as the temperature started to rise. Fever was induced daily by this method until the patient had received a total of from ten to eighteen days of treatment, a day of rest usually being given after each six days of fever. Each day as the temperature returned to normal the patients were allowed up about the ward. Aside from the slight loss of weight and the frequent occurrence of herpes labialis, no ill effects were observed and the patients were able to leave the hospital two or three days after completing treatment. Patients were observed for periods varying from five to twenty-six months after receiving fever therapy. There were 28.5 per cent of reversals and 57.1 per cent of instances of marked improvement in the spinal fluid formula. This compares favorably with the 36.7 per cent reversals and the 20.7 per cent instances of improvement in the spinal fluids reported by Solomon and Epstein following malarial therapy. Fever therapy with typhoid H antigen provides a method that may be carried out in the home by a nurse under the supervision of a physician.

Anatomical Record, Philadelphia

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Functional Differentiation of Hepatic Cells of Chick Embryo. A. J. Dalton, Cleveland.—p. 393.
Description of the Brain of a Human Cyclopian Monster. F. A. Mettler and Cecilia C. Mettler, Augusta, Ga.—p. 411.
Innervation of Suprarenal Glands. C. A. Swinyard, Minneapolis.—p. 417.
Functional Transplants of Primordium of Epithelial Hypophysis in Amphibia. W. J. Atwell, Buffalo.—p. 431.
Origin of Entodermal Cells from Primitive Streak of the Chick Embryo. T. E. Hunt, University, Ala.—p. 449.
Pigment Cells in Heterogenous Feathers. C. H. Danforth, Palo Alto, Calif.—p. 461.
Weights and Linear Measurements of Digestive System of Adult Cat. H. B. Latimer, Lawrence, Kan.—p. 469.
Effect of Progestin on Growth Response of Uterus to Chronic Distention. S. R. M. Reynolds, Brooklyn, and W. M. Allen, Rochester, N. Y.—p. 481.
Tables for Normal Development of Rana Sylvatica. A. W. Pollister and J. A. Moore, New York.—p. 489.
Comparison and Rate of Testicular Degeneration in Rats After Cryptorchidism and Hypophysectomy. S. L. Leonard and J. B. Hamilton, Albany, N. Y.—p. 497.

Archives of Neurology and Psychiatry, Chicago

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Vascular Architecture of Lesions of Multiple Sclerosis. T. J. Putnam and Alexandra Adler, Boston.—p. 1.
Relationship of Autonomic Nervous System to Pathogenesis of Epilepsy. K. Orzechowski, Warsaw, Poland.—p. 16.
Lissauer's Dementia Paralytica: Study of Its Pathogenesis. N. Malamud, Ann Arbor, Mich.—p. 27.
Combined System Diseases in Tabes Dorsalis. C. Davison and H. Kelman, New York.—p. 43.
*Unsteadiness of Heart Rate in Psychotic and Neurotic States. J. C. Whitehorn and Helen Richter, Waverley, Mass.—p. 62.
Aggression and Anxiety in Determination and Nature of Manic Attacks. N. L. Anthonisen, Waverley, Mass.—p. 71.
The Mood—Content Problem and Thymonoic Reactions. W. Muncie and P. White, Baltimore.—p. 90.
Stain for Myelin Sheaths in Tissues Embedded in Paraffin. G. S. Mahon, New Haven, Conn.—p. 103.
Unilateral Cerebral Dominance as Related to Mind Blindness: Minimal Lesion Capable of Causing Visual Agnosia for Objects. J. M. Nielsen. Los Angeles.—p. 108.
Contribution to the History of Narcolepsy. H. A. Cave, London, Ont. —p. 136.

Unsteadiness of Heart Rate in Psychotic and Neurotic States.—Whitehorn and Richter find that psychotic patients, even when reacting with so-called affective behavior in a personal interview, maintain a steadiness of heart rate greater than that of normal subjects, whereas neurotic patients tend toward a greater unsteadiness of heart rate. The average unsteadiness of heart rate as measured by the percentage change per beat was 2.9 per cent for the psychotic patients, 6 per cent for the neurotic patients and 4.4 per cent for the normal subjects. The different groups overlap each other. Another point of distinction which rates psychotic persons as less variable is brought out by the comparison of the amplitude of waves on the heart records. On the basis of this comparison of wave amplitudes, normal and neurotic persons are nearly alike.

Archives of Ophthalmology, Chicago

18: 1-192 (July) 1937

Retinal Tumors in Tuberous Sclerosis: Review of Literature and Report of Case, with Especial Attention to Microscopic Structure. H. C. Messinger and B. E. Clarke, Providence, R. I.—p. 1.
Secondary Cataract, with Particular Reference to Transparent Globular Bodies. A. Cowan and W. E. Fry, Philadelphia.—p. 12.
Sketch of Early Days of Ophthalmology in Philadelphia. B. Chance, Philadelphia.—p. 23.
*Suggestions for Prevention of Ocular and Aural Sequels of Meningococcic Meningitis. W. P. Eagleton, Newark, N. J.—p. 46.
Adenocarcinoma of a Meibomian Gland: Report of Additional Cases. A. Hagedoorn, Amsterdam, Netherlands.—p. 50.
Use of Sucrose Preparatory to Surgical Treatment of Glaucoma: Preliminary Report. E. W. Dyar and W. B. Matthew, Indianapolis.—p. 57.
Hypersensitivity to Pontocaine: Report of Case. R. L. Pfeiffer, New York.—p. 62.
Repair of Choroidal Detachment: Report of Case. L. Bothman, Chicago. —p. 65.
Embryotoxon Corneae Posterius Axenfeld: Review of Literature and Report of Case. F. Bloch, New York.—p. 68.
Retinal Detachment Due to Allergy: Report of Case. L. H. Prewitt, Ottumwa, Iowa.—p. 73.
Effect of Cysteine Hydrochloride on Conjunctiva. J. G. Bellows, Chicago. —p. 76.
Human Autonomic Pharmacology: IX. Effect of Cholinergic and Adrenergic Drugs on the Eye. A. Myerson and W. Thau, Boston.—p. 78.
Tumor of Optic Chiasm and Optic Nerves: Report of Case. J. M. Levitt, Brooklyn.—p. 91.
Treatment of Carotid Artery-Cavernous Sinus Fistula: Report of Case. J. Browder, Brooklyn.—p. 95.
Pathogenesis of Unilateral Exophthalmos. E. B. Spaeth, Philadelphia. —p. 107.

Prevention of Sequels of Meningitis.—Eagleton suggests that physicians attempt to prevent the ocular sequels of meningococcic meningitis by treating the various lesions causing the ocular disturbance at the site of the embolic infarction in a manner similar to that now employed in the treatment of suppurative meningitis. The optic nerve is involved as a perineurositis. There is no papilledema from pressure. The impairment of hearing associated with pyogenic meningitis is due to effusions in the arachnoid space; the deafness is never complete, because the eighth nerve withstands pressure well. On the other hand, the deafness associated with meningococcic meningitis is generally complete, because the disease involves the vessels of the nerve tissue itself, either in the labyrinth or in the brain. With the embolic process of meningococcic infection, nystagmus is present for some time immediately after the invasion of the labyrinth. The author suggests that the therapeutist from the beginning of meningococcic meningitis try to differentiate (1) embolic lesions of the blood stream (such as the intra-ocular effusions) from (2) those due to cerebral meningo-encephalitis, and that serum be applied as near the site of the lesion as is possible. In cases in which there is vertical nystagmus, putting serum into the basal cistern should be tried, as in all such cases up to the present time the condition has terminated fatally. If emboli lodge in the eyeball the injection of serum into the anterior chamber or even into the vitreous might be tried, as in all such cases the condition ends in blindness and is known to be of blood vessel origin. Increased intracranial pressure due to meningococcic meningitis can be relieved surgically.

California and Western Medicine, San Francisco

47: 1-72 (July) 1937

Education of a Dermatologist. T. J. Clark, Oakland.—p. 7.
Health Department Remedies for Sick Housing. J. C. Geiger, San Francisco.—p. 9.
Peripheral Vascular Disturbances: Evaluation of Methods for Their Study. A. H. Elliot, R. D. Evans, C. S. Stone and P. A. Gray, Santa Barbara.—p. 13.
Management of Postoperative Pain. S. H. Babington, Berkeley.—p. 23.
Natural Gas: Its Physiologic Action. D. B. Tyler and D. Drury, Los Angeles.—p. 25.
Pathogenesis of Otogenous Cerebellar Abscess: Study of Sixteen Cases Verified at Autopsy. C. B. Courville and J. M. Nielsen, Los Angeles. —p. 29.

Colorado Medicine, Denver

34: 441-552 (July) 1937

Modern Trends in Interpretation of Pulmonary Tuberculosis. H. J. Corper, Denver.—p. 458.
Pain and Pain Equivalents in Anginal Syndrome. C. T. Burnett, Denver.—p. 464.
Antigenic Studies of Polysaccharides Isolated from Pollen. W. C. Service, Colorado Springs.—p. 468.
Normal Standards for Red Blood Cell Values in Colorado. E. R. Mugrage and Marjory I. Andresen, Denver.—p. 473.
*Verruca, with Description of Recently Introduced Treatment. J. G. Hutton, Denver.—p. 478.
Recent Trends in Obstetrics. G. H. Phelps, Cheyenne, Wyo.—p. 484.
Injection Treatment of Inguinal Hernia. R. J. Boesel, Cheyenne, Wyo. —p. 487.

Verruca.—Hutton introduces a new method for the treatment of warts, which consists of the injection of a small amount of some sclerosing agent into the base of the wart. The injection is made with a tuberculin syringe and a fine gage needle and is accompanied by a surprisingly small amount of pain. After a few days the wart becomes dry and hard very much like a callus and after ten days, two weeks or longer, depending on the size of the wart and the thickness of the surrounding skin, the wart comes off or can be trimmed off, leaving a practically normal skin underneath. The following solutions have been used: quinine and urethane, 50 per cent invert sugar, equal parts of 50 per cent dextrose and 30 per cent sodium chloride, sodium morrhuate and potassium oleate. The heavier solutions have a distinct advantage in that they remain localized at the point of injection with less infiltration of surrounding tissue and therefore cause less pain. This increased localization seems also to increase the chance of curing the wart. The sclerosing solution should be injected into the wart rather than into the corium or the subcutaneous tissues underneath the wart. This aids greatly in keeping the injected solution localized by preventing infiltration into the surrounding tissue and minimizing not only the pain but also the resulting reaction within the tissues produced by the foreign substance.

Illinois Medical Journal, Chicago

72: 1-100 (July) 1937

Medicine at the Crossroads. R. L. Green, Peoria.—p. 59.
Present Problems in Preventive Medicine. E. A. Thacker, Urbana.—p. 63.
Industrial Hygiene: Its Historical Development and Modern Campaign. M. H. Kronenberg, Chicago.—p. 66.
Convalescent Blood in Typhoid Fever. G. D. J. Griffin, Chicago.—p. 70.
Typhoid Fever and Diphtheria in Illinois. F. J. Jirka, Springfield.—p. 74.
Use of Ergotamine Tartrate in Treatment of the Tabetic Bladder. E. Palmer and J. T. Gernon, Chicago.—p. 77.
Mesenteric Vascular Occlusion: Report of Case of Complete Occlusion of Superior Mesenteric Artery with Involvement of Practically the Entire Small Intestine. M. S. Underhill, Evanston.—p. 84.
Organic Inferiority or Allergic Conditions in Surgery and Gynecology. W. W. Voigt, Chicago.—p. 87.
Impotence and Its Medical Treatment. L. M. Beilin, Chicago.—p. 89.

Indiana State Medical Assn. Journal, Indianapolis

30: 325-370 (July) 1937

Protamine Insulin in Treatment of Diabetes Mellitus. J. H. Warvel and M. R. Shafer, Indianapolis.—p. 325.
Scarlet Fever. Gladys R. Dick, Chicago.—p. 332.
Postoperative Care. C. B. Puestow, Chicago.—p. 338.
Insulin Shock Treatment of Schizophrenia. H. Nisenbaum, Evansville.—p. 341.
Some Problems of Surgical Diagnosis and Treatment: Interesting Case Reports. P. G. Skillern, South Bend.—p. 343.

Iowa State Medical Society Journal, Des Moines

27: 279-398 (July) 1937

Recent Views of Senile Cataract. S. R. Gifford, Chicago.—p. 279.
Head Specialties: Everyday Practice. T. R. Gittins, Sioux City.—p. 281.
Present Trends in Pulmonary Diagnosis and Therapy. C. E. Harris, Grinnell.—p. 288.
Frequency of Syphilis and Neurosyphilis in Chronic Alcoholism. R. A. Stewart, Independence.—p. 291.

Johns Hopkins Hospital Bulletin, Baltimore

61: 1-74 (July) 1937

*Lesions of Lead Encephalitis in Children. S. S. Blackman Jr., Baltimore.—p. 1.
Production of Hyaline Arteriolosclerosis and Arteriolonecrosis by Means of Proteolytic Enzymes. A. R. Rich and G. L. Duff, Baltimore.—p. 63.

Lead Encephalitis in Children.—Blackman describes twenty-two cases, all occurring in children, in which the evidence of lead poisoning was clear in each instance. In most cases lead was ingested by nibbling painted articles, usually furniture. Paint may be swallowed in this manner for many months (from five to eighteen months in this series) before the onset of neurologic disturbances. Lesions are found throughout the entire central nervous system. They are most abundant in the cerebral hemispheres and cerebellum. All the changes are patchy in distribution, but examination of many sections shows the presence of numerous lesions. The microscopic changes are those of a serous inflammation. Vascular lesions are found, including capillary necrosis and thrombi, together with abundant exudate, tissue damage and evidence of repair. Most of the injury to the nervous tissue seems dependent on the accumulation of exudate. Fresh serous exudate and the older droplets cause distortion of the architecture of the brain, depending on the location and quantity of the fluid. Fields in the gray and white matter diffusely saturated with exudate contain many damaged and necrotic nerve and glial cells, and there is marked tearing and necrosis of fibers. In patients who recover after the initial convulsions, functional disorders varying from mental retardation to spastic paralysis may be expected, depending on the intensity and location of the injuries. Microscopically, there is a corresponding loss of tissue in the gray and white matter of the brain and cerebellum. Remnants of old coagulated exudate are found, basophilic in appearance like calcium, and basophilic plaques in the walls of blood vessels.

Journal of Bacteriology, Baltimore

34: 1-138 (July) 1937

Comparison of Germicidal Efficiency of Hypochlorites of High and Low Alkalinity. S. M. Costigan, Philadelphia.—p. 1.
Fermentation of Propylene Glycol by Members of Escherichia-Aerobacter-Intermediate Groups. K. P. Dozois, G. A. Lee, C. J. Carr, F. Hachtel and J. C. Krantz Jr., Baltimore.—p. 9.
Dissimilation of Organic Acids by Aerobacter Indologenes. H. Reynolds, B. J. Jacobsson and C. H. Werkman, Ames, Iowa.—p. 15.
Studies on Hemolytic Streptococci: IV. Streptococcus Scarlatinae. Alice C. Evans, Washington, D. C.—p. 21.
Appearance of Double-Zone Beta Hemolytic Streptococci in Blood Agar. J. H. Brown, Baltimore.—p. 35.
Dissociation in Bacillus Salmonicida, with Especial Reference to Appearance of a G Form of Culture. D. C. B. Duff, Vancouver, B. C.—p. 49.
Correlated Antigenic and Biochemical Properties of Staphylococci. R. Thompson and Devorah Khorazo, New York.—p. 69.
Influence of Salts in Diet on Intestinal Flora of Albino Rat. E. S. Eppright, G. Valley and A. H. Smith, New Haven, Conn.—p. 81.
*Practical Classification of Monilias. D. S. Martin, C. P. Jones, K. F. Yao and L. E. Lee Jr., Durham, N. C.—p. 99.

Classification of Monilias.—Martin and his colleagues studied 153 unidentified strains of Monilia isolated from various sources and compared them with nineteen "known" species types obtained from other investigators. They classified 150 of these organisms into one of six species. The methods used in classification are comparatively simple and the criteria on which identification is based are easily recognizable if the technic described is rigidly followed. An outline of the procedures necessary for identification is as follows: The fungus is isolated on Sabouraud's dextrose agar slant, transplanted to Sabouraud's dextrose acid broth and incubated at 37 C. for forty-eight hours. After the type of surface growth has been noted, the tube is shaken to suspend the sedimented organisms and streaked on a beef extract blood agar plate of p_H 7.4, which is incubated at 37 C. for ten days; the type of colony is noted, and a well isolated colony is picked and transplanted to a Sabouraud dextrose agar slant. This is incubated at room temperature or 37 C. for twenty-four or forty-eight hours. Some of the growth is transplanted to a carrot plug, which is kept at room temperature and subsequently examined for asci. The rest of the material is streaked on the surface of a beef extract agar slant p_H 7.4. The growth is subcultured on this medium for two or three generations and a loopful is streaked on a corn meal agar slide culture, which is incubated at room temperature in a moist sterile chamber for several days. The slide is then fixed, stained and examined microscopically for details of mycelial growth. Four beef extract broth tubes, containing 1 per cent of dextrose, sucrose, lactose and maltose respectively, are inoculated with a pipet containing a saline suspension of the last transplant of the fungus on the beef extract agar slant.

Journal of Clinical Investigation, New York

16: 479-684 (July) 1937

Effect of Heating with Alkali on Calorigenic Activity of Desiccated Thyroid and of Thyroxine. W. O. Thompson, Phebe K. Thompson, S. G. Taylor 3d and Lois F. N. Dickie, Chicago.—p. 479.
Magnesium Metabolism in Health and Disease: I. Magnesium and Calcium Excretion of Normal Individuals, Also Effects of Magnesium, Chloride and Phosphate Ions. Dorothy M. Tibbetts and J. C. Aub, Boston.—p. 491.
Id.: II. Effect of Parathyroid Hormone. Dorothy M. Tibbetts and J. C. Aub, Boston.—p. 503.
Id.: III. Exophthalmic Goiter, Basophilic Adenoma, Addison's Disease and Steatorrhea. Dorothy M. Tibbetts and J. C. Aub, Boston.—p. 511.
Studies in Temperature Sensation: I. Comparison of Sensation Produced by Infra-Red and Visible Radiation. T. W. Oppel and J. D. Hardy, New York.—p. 517.
Id.: II. Temperature Changes Responsible for Stimulation of Heat End Organs. T. W. Oppel and J. D. Hardy, New York.—p. 525.
Id.: III. Sensitivity of Body to Heat and Spatial Summation of End Organ Responses. J. D. Hardy and T. W. Oppel, New York.—p. 533.
*Acute Mountain Sickness: Effect of Ammonium Chloride. E. S. G. Barron, Chicago; D. B. Dill, H. T. Edwards, Boston, and A. Hurtado, Lima, Peru.—p. 541.
Use of Ferrous Gluconate in Treatment of Hypochromic Anemia. P. Reznikoff and W. F. Goebel, New York.—p. 547.
*Rheumatic Fever as Familial Disease: Environment, Communicability and Heredity in Their Relation to Observed Familial Incidence of Disease. May G. Wilson and M. D. Schweitzer, New York.—p. 555.
Splenic Vein Pressure in Congestive Splenomegaly (Banti's Syndrome). W. P. Thompson, J. L. Caughey, A. O. Whipple and L. M. Rousselot, New York.—p. 571.
Studies of Principle in Liver Effective in Pernicious Anemia: IV. Therapeutic Activity of Its Multiple Factors. B. M. Jacobson and Y. Subbarow, Boston.—p. 573.
Vitamin C Saturation Levels in Body in Normal Subjects and in Various Pathologic Conditions. P. Finkle, New York.—p. 587.
Studies on Elastic Properties of Human Isolated Aorta. P. Hallock and I. C. Benson, Minneapolis.—p. 595.
Calcium and Phosphorus Metabolism in Osteomalacia: V. Effect of Varying Levels and Ratios of Calcium to Phosphorus Intake on Their Serum Levels, Paths of Excretion and Balances, in Presence of Continuous Vitamin D Therapy. S. H. Liu, C. C. Su, S. K. Chou, H. I. Chu, C. W. Wang and K. P. Chang, Peiping, China.—p. 603.
Studies in Iron Transportation and Metabolism: I. Chemical Methods and Normal Values for Plasma Iron and "Easily Split-Off" Blood Iron. C. V. Moore, with technical assistance of W. R. Arrowsmith, J. J. Quilligan Jr. and J. T. Read, Columbus, Ohio.—p. 613.
Id.: II. Mechanism of Iron Transportation: Its Significance in Iron Utilization in Anemic States of Varied Etiology. C. V. Moore, C. A. Doan and W. R. Arrowsmith, Columbus, Ohio.—p. 627.
Result of Intra-Arterial Injection of Vasodilating Drugs on Circulation: Observations on Vasomotor Gradient. E. V. Allen and G. R. Crisler, Rochester, Minn.—p. 649.
Validity of Calculation of Standard Urea Clearances from Low Urine Volumes. L. C. Chesley, Jersey City, N. J.—p. 653.

Effect of Ammonium Chloride in Mountain Sickness.—Barron and his associates consider the disturbances produced as a consequence of rapid ascents to high altitudes. The alveolar air and the arterial oxygen saturations which they determined in subjects suffering from mountain sickness revealed only that in rapid ascents up to 4,700 meters the development of mountain sickness has no simple dependence on the arterial oxygen saturation and the alveolar oxygen pressure. Ammo-

nium chloride offers a handicap rather than an advantage (Haldane) in acclimatization. Since mountain sickness may be due to diminished oxygen utilization by certain tissues, the factors concerned with the maintenance of a suitable oxygen supply to the tissues are the vascular oxygen transport system (blood hemoglobin), the efficiency of which is regulated by the arterial oxygen capacity and saturation and by the alveolar oxygen, and the tissue oxygen transport system (myoglobin and part of the cytochrome complex), the efficiency of which is regulated by the blood flow, the state of the capillaries and the like. Since mountain sickness may occur when the vascular oxygen transport system is still within normal limits, it is suggested that the tissue oxygen transport system plays an important part in determining the appearance of mountain sickness, because it contains and transports the molecular oxygen, which will be immediately utilized by the oxidizing enzymes; i. e., the enzymes concerned with cellular respiration.

Rheumatic Fever as Familial Disease.—From the genetic analysis of their data (112 families observed from three to eighteen years) Wilson and Schweitzer conclude that the susceptibility for rheumatic fever is transmitted as a single autosomal recessive gene. This may be said with some assurance, since it is based on quantitative agreement between observed incidence and the value predicted from this hypothesis. A consideration of penetrance is of importance in diseases in which hereditary factors play a part. In the case of a recessive disease, the best method of estimating penetrance is from the progeny of positive parents. In the authors' series, four families in which both parents were positive had fifteen siblings. Of these, thirteen were rheumatic. Of the remaining two children, one is now 7 years old and the other is 15. The penetrance is therefore 86 per cent. Of thirteen additional siblings examined in five similar matings, ten were rheumatic; taking all these cases together there is a penetrance of 82 per cent. The failure of a dominant factor to be expressed in any generation may be attributed to poor penetrance. The high penetrance observed in families of positive parents in these families excludes this possibility for the authors' cases. If penetrance is found to be lower in different geographic localities or economic groups, or following particular changes in the environment, important progress will be possible in the prevention of this disease. In clinical investigation it would be advisable to select not a sample of the general population but a series of subjects whose genetic constitutions are known. The evaluation of the efficacy of proposed treatment would be the ratio of positives in the series compared with the predicted incidence for their known genetic background. Accepting the hereditary transmission of a susceptibility to rheumatic fever, it is interesting to consider whether every susceptible individual will necessarily develop rheumatic fever, or whether the development of the disease is dependent on other factors. From what is known of the disease, it is more likely that other contributing factors are involved, such as environment and exposure. Should comparable studies of the familial incidence of rheumatic fever in families of the well-to-do, living under more favorable climatic conditions, reveal a diminished incidence of the disease among susceptible individuals of the family, a preventive therapeutic method would be available in this disease. There was no direct relation between the type and source of exposure and the resulting activity. The incidence of rheumatic fever following "active exposure" and "inactive exposure" was comparable. Intimate contact ("familial exposure") and casual contact ("extrafamilial exposure") were equally effective.

Journal of General Physiology, New York

20: 767-904 (July) 1937. Partial Index

Apparent Distortion of Brief Rectangular Electrical Stimuli in Nerve. H. A. Blair, Rochester, N. Y.—p. 787.
Immunologic Studies on Pepsin and Pepsinogen. C. V. Seastone and R. M. Herriott, Princeton, N. J.—p. 797.
Influence of Light Adaptation on Subsequent Dark Adaptation of the Eye. S. Hecht, C. Haig and A. M. Chase, New York.—p. 831.
Do Melanophore Nerves Show Antidromic Responses? G. H. Parker, Cambridge, Mass.—p. 851.
Phase Rule Study of Proteins of Blood Serum: Effect of Changes in Certain Variables. E. Jameson, San Francisco.—p. 859.
Biogenesis of Primary Sex Hormones: I. Fate of Estrins Injected into Rabbit. G. Pincus and P. A. Zahl, Cambridge, Mass.—p. 879.

Journal of Lab. and Clinical Medicine, St. Louis

22: 985-1096 (July) 1937. Partial Index

Amebic Dysentery: Analysis of Laboratory Data from 400 Cases. R. H. Kampmeier and E. H. Hinman, New Orleans.—p. 985.
*Rôle of Vitamin B_1 in Cardiovascular Diseases: Preliminary Report. W. A. Jones and B. Sure, Fayetteville, Ark.—p. 991.
Gastric Achylia: Study of Electrolytes of Gastric Juice. M. H. Streicher, R. Snyder, S. Liebman and R. W. Keeton, Chicago.—p. 1003.
*Second Attack of Meningococcic Meningitis with Recovery: Two Cases. H. W. Schaffer and J. T. Freeman, Philadelphia.—p. 1010.
Normal Urinary Iodine of Man. G. M. Curtis, I. D. Puppel, Versa V. Cole and N. L. Matthews, Columbus, Ohio.—p. 1014.
Variations in Toxicity of Morphine Sulfate. A. J. Nedzel, Chicago.—p. 1031.
Chemical Diagnosis of Pregnancy by Detection of Estrin in Urine: II. Note on Hydrolysis of Estrin Esters. M. J. Schmulovitz and H. B. Wylie, assisted by J. N. Cianos, Baltimore.—p. 1037.
Rapid and Accurate Methods for Determination of Urea Nitrogen in Blood and Urine by Direct Nesslerization. H. T. Wrenn, New York.—p. 1040.
Hippuric Acid Elimination as Test for Liver Function. K. Yardumian and P. J. Rosenthal, Pittsburgh.—p. 1046.
Studies on Kline Test for Syphilis: I. Technic of Kline Test on Heated Serum, with Especial Reference to Quantitative Aspects. A. S. Wiener, Brooklyn.—p. 1062.

Vitamin B_1 in Cardiovascular Diseases.—Clinically, the thirty patients with cardiovascular disease whose diet Jones and Sure supplemented with vitamin B_1 were easier to manage, were contented and used less medication than any group they have had under their supervision. With the exception of three patients, all stated that they felt better than they had in years. Respiration average of the thirty patients for the first week was 21 and the average for the last week under treatment was 18½. Pulse rate average for the first week was 89, the last week 79. Blood pressure showed definite improvement, with exception of one case, and the blood pressure gradually increased in this one instance. The patients were walking from two to four miles a day at the time of discharge from the hospital and reported no undue ill effects. Their respiration and pulse rates and blood pressure showed improvement over admission to this hospital after indulging in exercise. Whether this improvement is entirely due to vitamin B_1 therapy or not the authors are unable to say. There were no deaths and the average length of hospitalization was 114 days.

Recovery After Second Attack of Meningococcic Meningitis.—The dividing line between relapse and fresh infection is difficult to establish. For practical purposes Schaffer and Freeman consider a patient as recovered when, while ambulant, examination of the cerebrospinal fluid shows a normal number of cells, persistent negative spinal fluid culture under lowered oxygen tension, normal spinal fluid sugar and chloride values, normal temperature and pulse, and absence of abnormal neurologic signs. Newer immunologic agents may yield opportunities for certainty, and active immunization may lower the incidence of second infections as well as primary infections. Since it is not possible at this time to be certain when an infection with the meningococcus is ended, patients who have had the disease must be regarded as potentially liable to additional attacks. In their two cases the second attack of the disease was proved each time.

Journal of Pediatrics, St. Louis

11: 1-156 (July) 1937

Hypoglycemia. A. F. Hartmann and J. C. Jaudon, with technical assistance of Marie Morton, St. Louis.—p. 1.
Diverse Attributes of Healthy Children: Report of Progress in Understanding the "Normal Child." A. H. Washburn, Denver.—p. 37.
*Elevated Temperatures in Childhood Due to Exercise. W. A. Hawke, Toronto.—p. 64.
*Care of Skin of the New-Born Infant: Six Year Study of 3,500 New-Born Infants. H. N. Sanford, Chicago.—p. 68.
Aural Complications of Pneumonia in Children. C. E. Towson, Philadelphia.—p. 77.
Public Health Methods in Private School. Lucy Porter Sutton, New York.—p. 88.

Fever Due to Exercise.—Hawke bases his remarks on a study of 2,500 temperature readings from thirty children varying from 3 to 14 years of age. The children selected were those with no physical defects other than the common dental or visual abnormalities. Each child had been admitted because of behavior problems due to maladjustment at home or at school. The temperatures were taken rectally at 6 a. m. before

arising, at 11 a. m. before lunch, at 4 p. m. before supper and at 8 p. m. before retiring. In addition to recording the temperature, a note was made of the type of exercise and the activity of the child for an hour or so before his temperature was taken. No specific exercises were given and the children followed out the usual routine of the home. The exercise was, for purposes of analysis, divided into two types: mild, which consisted of school, cinema, council or walking about the wards, and severe, which consisted of sleighing, skating, basket ball and baseball. There is definite proof that exercise will raise the body temperature. The average resting temperature for all the children was 98.2 F. and varied from 97.3 to 99.8 F. When the results are considered after mild exercise it is found that the average level was 99.2 F. and that 90 per cent of the children had a temperature above 99 F. The average reading after severe exercise was 100.2 F. and in 70 per cent of the children more than 100 F. Every child showed some elevation in temperature after exercise. The height reached in most cases depended on the activity of the child, but in a few cases this correlation was not true, and one must suspect some constitutional factor probably involving the heat regulatory centers. The response of the individual to exercise is fairly constant, although occasionally there were marked differences in the readings obtained after similar activities on different days. There is apparently no relation to sex or age and some of the highest values were obtained from children of 12 years or older. In order to see how long the temperature would remain up after exercise, some of the 4 p. m. readings were checked every thirty minutes until the children were in bed. The time taken for it to fall to 99.2 F., the level of mild exercise, varied with the routine chosen. If the children were allowed to carry on the ward routine, only a few reached that level within sixty minutes and most temperatures were up until bedtime or later. If the children were put to bed at 4 p. m., most temperatures reached that level within sixty minutes.

Care of Skin of the New-Born.—Owing to the fact that the frequency of skin lesions in the new-born infant is still unknown, Sanford began a study in 1930 by examining the skins of new-born infants at birth and each day thereafter. All lesions of any type were noted. The lesions were classified into three groups: (1) irritations, including all erythematous macules and papules, as erythema toxicum and all forms of intertrigo, (2) pustules, including all vesicles and pustules, as the so-called benign pustulosis, impetigo and pemphigus neonatorum and (3) pustules with exfoliation, that is exfoliative dermatitis, but there was no case of this in the series covering six years. There was no seasonal incidence for either irritations or pustules. There is no apparent relationship between irritations and pustules; that is, an increase in the frequency of irritations does not mean an increase in pustules. There is no doubt that some internal factor acts as a cause of toxic erythema. The incidence appears to be about the same irrespective of the external treatment. It may be that something in the colostrum in the nature of hormones may be responsible, and it has been suggested that this is a pregnancy reaction. Babies with this condition show no other symptoms of any kind. Other erythemas and intertrigo are due to outside mechanical irritations. For the first few days, improperly laundered linen is the commonest cause. After the first week, circumcision was the chief cause of irritations. The skin of some new-born infants is sensitive to the antiseptics used to sterilize the field, and the skin of others is sensitive to the petrolatum used in the dressings. There was but little difficulty with intertrigo. Buttocks reddened from loose stools healed promptly when exposed to air and the heat from an ordinary incandescent bulb at a distance of 20 inches. Irritations caused by rubbing the face with the hands responded quickly after encasing the baby's hands in silk mittens. Nursing technic and the isolation of infants with initial lesions is one of the greatest factors in the control of skin lesions in the new-born. Beginning in 1935, with some hesitation the author decided to leave the skin of the new-born infant entirely untreated. The excess blood was gently wiped off and nothing further was done for nine days. This method has been so satisfactory that it has been continued. The number of irritations is practically the same as it was with the olive oil alone, ammoniated mercury and olive oil, and ammoniated mercury and water, but the most astounding result was the practical absence of pustules. During the study year only one pustule was found on one baby. It is apparent, therefore, that the skin of the new-born infant, if left alone and not injured by rubbing with an antiseptic or irritated with washings, tends to clear itself and seems to give some immunity to infection. After the first nine days, olive oil or liquid petrolatum may be used for the daily bath. From a physical standpoint the skin of these new-born infants is much more pink and healthy appearing than is the skin washed with oil or water.

New England Journal of Medicine, Boston

217: 45-84 (July 8) 1937

*Lymphogranuloma Inguinale: Clinical Study of Thirty Cases of Sixth Venereal Disease in Natives of New England. E. M. Chapman and E. P. Hayden, Boston.—p. 45.
Surgery of Prostate, Open and Closed, with Especial Reference to Technic. J. F. McCarthy, New York.—p. 57.
Progress in Anesthesia. R. F. Sheldon, Boston.—p. 64.

Venereal Lymphogranuloma.—In the last three years at the Massachusetts General Hospital and in private practice Chapman and Hayden saw the several manifestations of venereal lymphogranuloma in thirty white persons of all social levels, most of whom have never been outside New England. Furthermore, the confusion of this disease with other venereal diseases, malignant tumors, tuberculosis, Hodgkin's disease or simple traumatic infection gave them startling evidence that this disease entity is passing unrecognized in white people. These facts predict a wider recognition of a condition that can no longer be regarded as climatic, racial or rare. Venereal lymphogranuloma is venereal in origin, having its onset with a genital lesion that may pass unnoticed, from one to three weeks after exposure. This lesion may be a fleeting herpetic lesion resembling herpes praeputialis, an ulcerative lesion, a nodular lesion or a nongonococcic urethritis, the discharge showing only polymorphonuclear leukocytes without organisms. Nonvenereal and extragenital infections are extremely rare but possible. The thirty patients described had Frei tests positive to human antigen. In the entire group of cases a previous history of gonorrhea was obtained in six and the gonococcus complement fixation test was positive in three. The routine Hinton and Wassermann tests revealed the presence of syphilis in four; only one of these four patients was cognizant of his disease, and he had received some treatment after it was acquired in 1915. In the authors' experience with the acute disease, bed rest, nursing care, local heat applied to the bubo to hasten abscess formation and simple aspiration of the pus are most important in returning the patient as quickly as possible to a useful life. He will, however, continue to harbor the disease. At best, the patient can be told that the disease comes on over a period of weeks, is in full bloom for a few weeks and subsides in the course of the following months or more. The most serious effect of this disease, and the most difficult to treat, is the involvement of the lower part of the rectum and of the vulva and perineum. Surgical incision and drainage are necessary in late cases with fistulas. An instance may occasionally arise in which the perianal infection is so widespread and intractable that colostomy is indicated in an effort to reduce the amount of infection by directing the fecal current from the involved area.

New York State Journal of Medicine, New York

37: 1181-1270 (July 1) 1937

Sequels of Head Injury. I. Strauss and N. Savitsky, New York.—p. 1181.
Syringomyelia Treated by X-Ray. M. B. Radding, New York, and J. A. Forestiere, West New Brighton.—p. 1189.
*Progressive Muscular Dystrophy: Biochemical Endocrine Study. L. Berman, New York.—p. 1191.
Esophageal Obstruction: Seventy-Eight Hospital Cases. E. A. Sunde, Brooklyn.—p. 1197.

Progressive Muscular Dystrophy.—Berman studied certain biochemical characteristics of progressive muscular dystrophy and the response to endocrine therapy intended to affect these biochemical abnormalities. Pathologically not much can be gleaned as to the nature or causation of the disease process. Consequently attention was turned to the study of the metabo-

lism and the regulators of metabolism, the endocrine glands, in these patients. It was at first thought that the seat of the disease was primarily in the nervous system, but the study of the nervous system has failed to reveal changes comparable in extent or gravity with those in the muscles. In the studies conducted by the author, the following metabolic changes have been discovered to be constant characters of the disease: (1) a hypoglycemia, more marked than that which occurs in any other form of myoneural disease, (2) a disturbance of the blood sugar tolerance, (3) a hypocholesteremia and (4) a creatinuria, with a disturbance of creatine tolerance. On the theory that the hormones most definitely involved in the disturbances of sugar and phosphocreatine metabolism in progressive muscular dystrophy were those of the parathyroid and adrenal cortex, parathyroid extract and adrenal cortex extract were administered to twenty-two patients in various stages and ages of the disease. Marked clinical improvement occurred in fifteen; there was a rise in the blood sugar and blood cholesterol and a normalization of the blood sugar tolerance curve together with a reduction in creatinuria and an increased creatine tolerance, signifying an increased ability of the muscles to handle creatine and apparently as a result of the treatment. These observations, correlated with recent studies concerning the relation of the parathyroids to phosphocreatine metabolism and of the adrenal cortex to sugar metabolism in muscle, would seem to indicate that progressive muscular dystrophy represents a muscular dysplasia occurring on a basis of an endocrine dyscrasia centering around a deficiency or imbalance of the parathyroids and adrenals.

Pennsylvania Medical Journal, Harrisburg

40: 803-900 (July) 1937

Venereal Diseases, with Particular Reference to Granuloma Inguinale and Lymphogranuloma Inguinale. H. N. Cole, Cleveland.—p. 803.
Problems of Posture: From the Standpoint of Etiology and Treatment. D. Silver, Pittsburgh.—p. 809.
Considerations in Bowel Surgery. C. B. Rentschler, Reading.—p. 813.
*Retropharyngeal Abscess in Children. H. Dintenfass, Philadelphia.—p. 817.
Chronic Sinusitis: Its Relation to Chronic Bronchitis. F. W. Davison, Danville.—p. 821.
Cancer of the Breast. D. Guthrie and W. F. Shepherd, Sayre.—p. 826.
Gastric Resection with Pylorectomy: Method of Choice in Surgical Treatment of Peptic Ulcer. H. May, Philadelphia.—p. 832.
Clinical Management of Preeclampsia and Eclampsia. B. Harden, Pittsburgh.—p. 835.
The Universal Application of Fascia in All Hernias. M. Behrend, Philadelphia.—p. 837.
Bronchoscopy as Treatment of Postoperative Atelectasis. J. A. Perrone, Pittsburgh.—p. 842.
Liver Therapy in Various Anemias and in Case of Hemochromatosis. L. I. Fisher and H. A. Rothrock Jr., Bethlehem.—p. 846.
Unusual Fractures and Their Treatment. D. Hinton, Drexel Hill.—p. 849.
Accurate Localization of Foreign Bodies in the Eyeball. C. J. McCullough, Washington.—p. 852.

Retropharyngeal Abscess in Children.—Dintenfass maintains that in all children with acute sore throat and especially with large projecting tonsils a thorough search should be made behind the posterior pillars for the presence of a retropharyngeal abscess. Early diagnosis is important because retropharyngeal abscess is always a dangerous condition, and neglected cases frequently lead to death. Cases have been reported in which death ensued as a result of hemorrhage from erosion of the internal carotid artery and still others in which the jugular vein had become thrombosed with consequent bleeding or sepsis. The bacteriology of retropharyngeal abscess gives evidence that the predominating exciting micro-organism is the hemolytic streptococcus, less frequently the staphylococcus and pneumococcus. A number of conditions should be differentiated from retropharyngeal abscess, chief of which are enlarged thymus, meningitis, laryngeal diphtheria, severe adenitis, foreign body in the larynx, osteomyelitis and tuberculosis of the cervical spine. The treatment of retropharyngeal abscess in the beginning stage consists of the application to the neck of hot moist compresses, which are changed frequently. In addition steam inhalations and hot gargles whenever possible and the injection of nonspecific protein my prove of value. When the stage of suppuration is reached, the one curative treatment is operation. Suction is employed to complete the evacuation of the abscess. Improvement following the initial discharge of pus may be only temporary, and renewal of symptoms may occur as the result of the closing together of the wound edges. This necessitates a further introduction of closed forceps followed by more suction. The procedure may have to be repeated for several days until a cure results. If the retropharyngeal abscess has broken through into the parapharyngeal space and an incision in the pharynx is inadequate to drain the abscess cavity properly, an external incision is necessary. External incision should always be made if the abscess is tuberculous in character and has its origin in the vertebrae. In cases of hemorrhage from a ruptured carotid artery or jugular vein, or septic phlebitis of the jugular vein, ligation of the particular vessel is indicated. Case reports emphasizing the difficulties that may be encountered in the diagnosis and treatment of the condition are presented.

Psychiatric Quarterly, Utica, N. Y.

11: 333-530 (July) 1937

Schizophrenic Thought: Case Report. B. Pollack, Rochester, N. Y.—p. 337.
Infant Feeding and Personality Disorders: Study of Early Feeding in Its Relation to Emotional and Digestive Disorders. J. Hill, Houston, Texas.—p. 356.
Prognosis in Dementia Praecox: Comparative Study of Present Results and Those Obtained from Hypoglycemic Treatment. D. Whitehead, Utica, N. Y.—p. 383.
Psychiatric and Social Treatment: Functions and Correlations. Leona M. Hambrecht, New York.—p. 391.
Mechanism of Continuous Bath Therapy in Excitement. G. M. Davidson, Ward's Island, N. Y.—p. 424.
Statistical Study of Benign Stupor in Five New York State Hospitals. H. L. Rachlin, New York.—p. 436.
Note on Rate of First Admissions with Traumatic Psychoses in New York State. B. Malzberg, New York.—p. 445.
Social Competence of the Feebleminded Under Extra-Institutional Care. E. A. Doll and S. Geraldine Longwell, Vineland, N. J.—p. 450.
Studies in Obsessive Ruminative Tension States: IV. Psychasthenia, Definition and Delimitation. L. F. Woolley, Towson, Md.—p. 465.
Extramural Care in New York State, with Reference to Persons with Mental Disorders and Mental Deficiency. R. R. Steen, New York.—p. 481.
Technical Approaches Used in Study and Treatment of Emotional Problems in Children: Part IV. Collective Phantasy. J. Louise Despert, New York.—p. 491.
Patients' Observations on Care and Treatment Made on Leaving a State Hospital. N. D. Black, Marcy, N. Y.—p. 507.

Public Health Reports, Washington, D. C.

52: 913-944 (July 9) 1937

Spontaneous Mammary Tumors in Mice: Factors Influencing the Incidence of Metastases. L. L. Ashburn.—p. 915.

52: 945-988 (July 16) 1937

Experimental Studies of Natural Purification in Polluted Waters: X. Reoxygenation of Polluted Waters by Microscopic Algae. W. C. Purdy.—p. 945.

Science, New York

86: 1-22 (July 2) 1937

Biologic Basis of Individuality. L. Loeb, St. Louis.—p. 1.
Significance of Adrenals for Adaptation to Mineral Metabolism. E. C. Kendall and D. J. Ingle, Rochester, Minn.—p. 18.
*Disappearance of Injected Epinephrine in Animal Body. S. S. Weinstein and R. J. Manning, Saskatoon, Sask.—p. 19.
Meningococcus Infection of Chick Embryo. G. J. Buddingh and Alice Polk, Nashville, Tenn.—p. 20.

Disappearance of Injected Epinephrine in Animal Body.—As an alternative hypothesis for the rapid disappearance of epinephrine from the blood, Weinstein and Manning suggest the following from a critical consideration of their problem: Epinephrine is not destroyed by the blood or to any significant extent by specific organs but passes rapidly through the capillaries into the tissues, where it is oxidized to a physiologically inactive substance, possibly protocatechuic acid. In the present experiments, rabbits were kept on a strictly controlled diet for forty-eight hours prior to the injection of epinephrine, and the phenolic content of the urine was determined in a twenty-four hour specimen. An increase in phenolic substances was obtained after injection of epinephrine equivalent to 80 per cent of the injected drug. A portion of the urine was acidified, hydrolyzed and concentrated under reduced pressure, the residue extracted several times, the extract reduced to dryness, and the dark brown mass extracted with ether produced, on evaporation of the ether extract, a small quantity of crystalline material, which gave characteristic tests for protocatechuic acid.

Southern Surgeon, Atlanta, Ga.

6: 183-266 (June) 1937

Liver Deaths and Complications of Gallbladder Surgery. C. G. Heyd, New York.—p. 183.
Internal Fixation of Fractures (Intracapsular) of Neck of Femur: Report of Twenty-One Cases. H. E. Conwell and J. D. Sherrill, Birmingham, Ala.—p. 194.
Pulmonary Abscess in Adults and Children: Clinical Observations. C. Jackson, Philadelphia.—p. 207.
Review of Surgical Treatment of Pruritus Ani. M. C. Pruitt, Atlanta, Ga.—p. 216.
Gastro-Enterostomy versus Polya Operation in Duodenal Ulcer. G. C. Engel, Philadelphia.—p. 231.
Endocrine Basis of Gynecologic Organotherapy. E. Novak, Baltimore.—p. 237.
Surgical Treatment of Painful Syndromes of Head and Neck. W. M. Craig, Rochester, Minn.—p. 245.

Texas State Journal of Medicine, Fort Worth

33: 207-280 (July) 1937

*Early Differential Diagnosis of Breast Tumors. A. C. Scott, Temple.—p. 213.
Burrowing Ulcers. J. W. Nixon, San Antonio.—p. 216.
Infection and Immunity: Résumé of Prevention of Infection. E. C. Mitchell and D. W. Goltman, Memphis, Tenn.—p. 220.
Relation of Maternal Vitamin A Deficiency to Microphthalmia in Pigs. F. Hale, College Station.—p. 228.
Plans for Public Health in Texas. G. W. Cox, Austin.—p. 232.
Insulin Hypoglycemia in Treatment of Schizophrenia: I. General Considerations. G. W. Day and E. O. Niver, Galveston.—p. 236.
Silicosis. C. A. Nau, Austin, and C. J. Koerth, San Antonio.—p. 242.
Species of Fungus as an Apparent Pathogen in Subacute or Chronic Inflammations of Different Organs of Body. Martha A. Wood and Ellen Kyle Wellensiek, Houston.—p. 247.
Some Skin Reactions Shown by Pregnant Women. J. B. Robinett Jr., Houston.—p. 252.
Hypoglycemia: Certain Diagnostic and Therapeutic Considerations. W. Rosenblatt, Wichita Falls.—p. 254.
Tuberculosis Program of the Texas State Department of Health. A. Burns, Austin.—p. 257.

Early Differential Diagnosis of Breast Tumors.—Scott believes that a definite tumor fixed to the adjacent breast tissues, adhering to the chest wall and to the overlying skin, presenting a retracted nipple, a deep dimpling of the skin and massive axillary nodes, need not be broken down into a foul smelling ulcer for any one to make a diagnosis of cancer. Early differential diagnosis of the malignant breast is frequently possible by careful search for the beginning of those signs which are so pathognomonic in late cancer. Enlarged and firm axillary lymph nodes may occasionally be found early in the lower axillary area, if the tumor occupies the upper outer quadrant of the breast. The earliest effect in tissue change is manifested in increased firmness, diminished elasticity and restricted motion. Skin adhesions and dimpling may be observed in early cancer when the breast is examined by a dim light glancing across the spherical surface of the breast and the tumor is slowly moved in such a manner as to cause dragging or pulling of its fibrous attachments to Cooper's ligaments, they, in turn, pulling on the overlying skin, causing it to become flattened or dimpled long before the usual skin adhesions and dimpling are to be observed by the customary examination. This early dimpling is significant of malignant change and can best be recognized by the use of oblique rays of a spotlight, which are directed across the surface of the breast during manipulation of the tumor in a darkened room. The resulting shadows magnify the dimples and make them clearly visible. The upward pressure of a tumor in the outer half of the breast, though benign, may exaggerate the normal creases, which run transversely across the anterior axillary fold and should not be mistaken for dimpling. It is often helpful to make comparison with a normal breast, which, under manipulation, preserves its smooth spherical surface. A study has been made of 178 cases, and the shadow test was applied in the diagnosis of eighty-nine of this number. Of these eighty-nine cases, forty-six were diagnosed benign. The shadow test, showing absence of dimples, was correct in forty-two cases, or 91.3 per cent. A dimple was found within the areola in three of these cases. In one, the dimple was found external to the areola. However, this dimple was small, deep and sharply defined, and it contained scar tissue evidently due to some previous inflammatory process and not produced by manipulation. Of the forty-eight cases diagnosed malignant, the shadow test, showing definite dimples, was correct in forty-one, or 97.6 per cent. Dimples within the areola are not to be relied on in determining a diagnosis, either in favor of or against a malignant change, and while dimples outside the areola usually may be depended on as pointing to malignant manifestation, an occasional error may occur by reason of some previous trauma, incisional scar or inflammatory process. Dimpling, as demonstrated by the shadow test, makes possible a differential diagnosis at an earlier stage of the disease than any other sign. It is particularly applicable in cases that have not advanced to the stage of demonstrable adhesions to the skin or the chest wall, and it has been of inestimable value in differentiating malignant tumors of the breast prior to demonstrable axillary metastasis.

United States Naval Med. Bulletin, Washington, D. C.

35: 293-372 (July) 1937

Seasickness. L. Humphreys.—p. 293.
Dementia Pugilistica. J. A. Millspaugh.—p. 297.
Report of Comparative Study of Liquid Insecticides. F. S. Johnson, with technical assistance of A. G. Vallee.—p. 303.
Some Diseases of Peripheral Arteries. E. V. Allen and I. L. Norman, Rochester, Minn.—p. 309.
Review of Trachoma. O. W. Cole.—p. 322.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

45: 353-408 (July) 1937

Calcium Deposits About Joints. H. H. Hitchcock, Oakland, Calif.—p. 353.
Some Observations on Regional Ileitis and Allied Conditions: Case Reports. R. D. Forbes and J. Duncan, Seattle.—p. 362.
Enterostomy: Technic and Management. J. H. Woolsey, Woodland, Calif.—p. 368.
Surgery of Right Colon with Relation to Arthritis. J. M. Schmoele, Los Angeles.—p. 375.
Basic Factors Involved in Proposed Electrical Methods for Measuring Thyroid Function: II. Resistance and Q Factor in Relation to Sex and Physical Conformation. A. Barnett, New York.—p. 380.

Wisconsin Medical Journal, Madison

36: 509-596 (July) 1937

*Pathologic Significance of Bleeding After Menopause. R. W. TeLinde, Baltimore.—p. 521.
Treatment of Erysipelas. M. J. Fox, Milwaukee.—p. 528.
Treatment of Snake Venom Poisoning. J. L. Keeley, Madison.—p. 534.
Cleft Palate Repair Technic Affording Better Speech Results. V. B. Hyslop, Madison.—p. 540.
Current Endocrine Problems in Gynecology. E. L. Sevringhaus, Madison.—p. 543.
Acute and Subacute Upper Respiratory Infections. J. Y. Malone, Milwaukee.—p. 548.
Encephalitis with Polyneuritis: Inhalation of Chemical Dust. S. A. McCormick, Madison.—p. 551.

Significance of Bleeding After Menopause.—By examining the records of all the patients (349) entering the Johns Hopkins Hospital with postmenopausal bleeding between Jan. 1, 1919, and Jan. 1, 1935, in which complete pathologic and clinical data were available, TeLinde hoped to determine the pathologic lesion causing the condition. The most frequent lesion responsible for postmenopausal bleeding was carcinoma of the cervix, which occurred in 32.4 per cent. If the cases of carcinoma of the cervix are added to those of the body of the uterus (14.9 per cent), it is found that the cause of postmenopausal bleeding is due to cancer of the uterus in 47.3 per cent. If to this are added the other malignant growths (eleven cases of malignant ovarian tumors, five cases of sarcomatous change in myomas, three cases of sarcoma of the endometrium and one case each of sarcoma of the vagina and secondary carcinoma of the vagina), a total of 53.3 per cent of the cases of postmenopausal bleeding are due to malignant changes of the genital tract. Therefore every woman bleeding a year or more after her last menstrual period has more than an even chance of suffering from some malignant process. This warrants the demand for a complete diagnostic study of all such patients. It is impossible to guess as to the malignant or benign source of the bleeding from the amount or character of the bloody discharge. Some of the cases with the least bleeding proved to be due to malignant lesions, while in others the most profuse bleeding was due to benign lesions. Bimanual and speculum examinations should be a routine procedure in every case. When these measures fail to reveal the cause, a diagnostic curettage will establish the diagnosis in most instances. On following a patient with postmenopausal bleeding in whom these diagnostic measures have failed to reveal the cause, one should regard an increase in the size of an ovary, suggesting beginning neoplasm, as an indication for a laparotomy, provided there is no medical contraindication.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 1241-1296 (June 19) 1937

Abnormalities of Growth and Development: Clinical and Pathologic Aspects. H. Gardiner-Hill.—p. 1241.
Auricular Flutter Continuing for Twenty-Four Years. T. Lewis.—p. 1248.
Hypo-Adrenalism and Pellagra: Rôle of Vitamin Deficiency. I. M. Sclare.—p. 1249.
Epithelial Overgrowths and Diverticula in Gut of Rats Fed on Human Diet. D. M. Lubbock, W. Thomson and R. C. Garry.—p. 1252.
Hypoglycemic Therapy in Psychoses. H. Gillies.—p. 1254.

1: 1297-1352 (June 26) 1937

Some Common Diseases of Rectum and Anal Canal. A. L. Abel.—p. 1297.
Abnormalities of Growth and Development: Clinical and Pathologic Aspects. H. Gardiner-Hill.—p. 1302.
Does Superfetation Occur? Report of Possible Case. B. C. Murless and F. L. McLaughlin.—p. 1309.
Keratoplasty. R. E. Wright.—p. 1311.
Syphilis in Diagnosis and Prognosis of Cancer. J. I. M. Black.—p. 1313.

Journal of Mental Science, London

83: 137-246 (March) 1937

Electro-Encephalogram in Epilepsy. F. Golla, S. Graham and W. G. Walter.—p. 137.
Differentiation of Neuroses and Manic-Depressive Psychoses. D. Curran.—p. 156.
Enumeration of Blood Platelets in Mental Disorders. D. K. Bruce.—p. 175.
Hysteria Showing Spontaneous Hyperventilation Tetany: Case. R. Fraser.—p. 190.
Effect of Altering Conditions of Autonomic Nervous System on Choline Esterase Level in Human Blood Serum. M. S. Jones and H. Tod.—p. 202.
*Urea Clearance Test in Psychotics. A. M. Wyllie.—p. 208.
Use of Diathermy in Idiopathic Epilepsy: Note. J. L. Clegg.—p. 216.

Urea Clearance Test in Psychotic Patients.—Wyllie examined eleven cases of epilepsy and thirty-four cases of melancholia by the method of Addis modified by Van Slyke intended to measure the renal efficiency in terms of the number of cubic centimeters of blood cleared of urea by the urine per minute; in other words, the volume of blood which contains the same amount of urea as is excreted per minute in the urine. There were two figures for almost every patient, the first being calculated on the excretion during the first hour and the second on the excretion during the second hour. The renal efficiency fell below the standards adopted for normality in only two of the thirty-four melancholic patients and in one of the eleven epileptic patients. In seventeen of the cases in which a slight albuminuria was noted at the time of the test, six showed a renal efficiency above 130 per cent. The results indicate that albuminuria occurring in patients suffering from melancholia or epilepsy is rarely associated with renal deficiency. The two melancholic cases that showed marked renal impairment had bad prognoses.

Lancet, London

1: 1505-1572 (June 26) 1937

Study of Cretinism in London, with Especial Reference to Mental Development and Problems of Growth. A. Lewis, with assistance of Nancy Samuel and Janet Galloway.—p. 1505.
*Menstrual Fistulas: Note on Significance of Transtubal Menstruation. R. G. Maliphant.—p. 1509.
Duodenitis and Its Surgical Treatment. G. Garry.—p. 1512.
Gluteal Aneurysm. H. I. Deitch and J. M. Rogan.—p. 1516.
Experimental Assessment of Therapeutic Efficacy of Amino Compounds, with Especial Reference to p-Benzylamino-Benzenesulfonamide. L. E. H. Whitby.—p. 1517.
*Death from Agranulocytosis After Treatment with Prontosil Flavum. J. G. G. Borst.—p. 1519.

Menstrual Fistulas.—Maliphant reports a case of uteroparietal fistula, which followed the drainage of a tuberculous pelvic abscess. Uteroparietal fistulas are of two types. In the first there is direct connection with the uterine cavity, and the fistula is usually the sequel of cesarean section. The second type is seen in conjunction with pelvic inflammation, and communication with the uterine cavity is indirect by one of the fallopian tubes or tubal stumps. In about one third of the recorded cases indirect uterine fistula has been associated with peritoneal or adnexal tuberculosis. The free transtubal menstruation often conspicuous in cases of tubo-abdominal fistulas signifies a breakdown of the sphincteric mechanism at the uterotubal junction. Chronic inflammation, by disturbing normal tubal physiology, may play an important part in the causation of pelvic endometriosis.

Agranulocytosis After Treatment with Prontosil Flavum.—Between September and December 1936 Borst treated thirteen cases of Bacillus coli pyelocystitis with prontosil flavum, and toxic symptoms developed in five of these. One patient became dyspneic and developed Cheyne-Stokes respiration; she was seriously ill for one day, but not cyanotic. The blood was not tested for sulfhemoglobin and methemoglobin. Three patients complained of paresthesia of the face and hands: two of them at the same time had sensory disturbances; while doing their hair they could not actually feel it. None of these patients received more than six tablets of 300 mg. of prontosil flavum daily, and after administration of the drug was discontinued the symptoms disappeared in a few days. The fifth patient developed agranulocytosis. During her stay in the wards this patient had no remedies except prontosil flavum, some dilute hydrochloric acid to facilitate its absorption, and 15 Gm. of castor oil. There can be no doubt about the close connection between the use of prontosil flavum and the occurrence of agranulocytosis, but the patient's unusual previous history of thrombopenic purpura may indicate some predisposing disease of the bone marrow. As a result of the unfavorable experience prontosil flavum treatment was stopped, and sulfanilamide was given to eleven other patients. This drug also caused toxic effects, but these were fairly harmless.

Medical Journal of Australia, Sydney

1: 853-894 (June 5) 1937

Cardiac Pain. K. S. Hetzel.—p. 853.
Wounds and Incisions. R. D. Wright.—p. 859.
Chrysotherapy in Rheumatoid Arthritis. L. J. A. Parr and Eva A. Shipton.—p. 864.
Results of Use of Gold Salts in 100 Cases of Pulmonary Tuberculosis. J. H. Blackburn.—p. 874.

1: 895-934 (June 12) 1937

Syphilis and Neurosyphilis Treated by Electropyrexia. G. P. U. Prior.—p. 895.
The Soldier Doctor. L. Duncan.—p. 910.
Suppuration in Petrous Temporal in Mastoiditis. E. Gutteridge.—p. 916.

South African Medical Journal, Cape Town

11: 395-426 (June 12) 1937

Bacteriologic Aspects of Enteric in South Africa. B. F. Sampson.—p. 397.
Enteric Fever in Rand Mines. A. J. Orenstein.—p. 401.
Urban and Rural Aspects of Enteric Fever Control. F. W. P. Cluver.—p. 402.

Journal of Oriental Med., Dairen, S. Manchuria

26: 87-118 (June) 1937. Partial Index

Experimental Glomerulonephritis Due to Toxins of Tubercle Bacilli. Y. Tsuge.—p. 87.
Teeth Anomalies in the Chinese. S. Ohshima.—p. 103.
Prostatic Stones. T. Uchimura.—p. 104.
*Iron as Causative Agent of Kaschin-Beck's Disease. K. Hiyeda, N. Hayashi and M. Aiiso.—p. 107.
Report of Mantoux Tests on 34,781 Japanese and Manchukuo School Pupils in Kwantung Leased Territory (Japan). J. Iio, T. Kitahara, Y. Morita, Y. Matsuura, G. Ishiyama, K. Ohga, R. Iwakuma, T. Ohta, K. Mase, I. Kawashima, H. Tada, Y. Futaki and F. Matsubara.—p. 109.
Dermatomycosis in the Holonbail Neighborhood of Manchukuo. S. Niizawa.—p. 114.
Pemphigus Vulgaris: Case. Kan Jin-Nan.—p. 115.

Iron as Causative Agent of Kaschin-Beck's Disease.—In previous papers Hiyeda and his associates have reported not only the epidemiology, pathologic anatomy and the clinical observations of Kaschin-Beck's disease but also the results of experiments made on laboratory animals by feeding them on various inorganic irons. From these studies it was verified that the iron of the drinking water in the endemic area is very high, the blood iron of the patients is sometimes three times more than normal, the various internal organs show an appreciable siderosis, and ulceration of the surface of joint cartilage and dilatation of the marrow cavity of the bones occurs in animals experimented on. From these data it is inferred that iron taken habitually in large amounts is the cause of Kaschin-Beck's disease.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

53: 983-1051 (July 12) 1937. Partial Index

Study of Acid Base Equilibrium by Analysis of Urine. J. Leyritz.—p. 984.
Late Results of Successive Double Stellectomy in Sinusal Tachycardia. L. Langeron.—p. 987.
Relapsing Agranulocytosis. M. Roch, M. Naville and Mlle. S. Jendt. —p. 988.
Combination of Diabetes with Biliary Lithiasis: Improvement of Diabetes by Cholecystectomy. F. Rathery and P. Froment.—p. 993.
*Late Sequels of Splenectomy in Course of Cirrhoses of Liver. A. Bergeret and J. Caroli.—p. 1019.
*Roentgenologic Opacification of Gallbladder by Black Bile. N. Fiessinger, A. Bergeret and A. Gajdos.—p. 1023.

Sequels of Splenectomy in Cirrhoses of Liver.—Bergeret and Caroli report observations on several splenectomized patients, who were kept under careful observation after the operation. The first patient was hospitalized on account of a hepatosplenomegalic cirrhosis for the first time in 1928. A search for etiologic factors remained negative. From this time on, the size of spleen and liver increased steadily. The general condition became aggravated; ascites developed and severe intestinal hemorrhages necessitated copious blood transfusions. During this critical state splenectomy was done (July 1931). Following the operation, the patient's condition improved considerably. The number of erythrocytes remained practically normal and ascites did not recur. Nevertheless, in November 1934 the patient had recurrent intestinal hemorrhages and severe attacks of pain in the hepatic region. The authors express the opinion that the late results demonstrate that in certain hypertrophic cirrhoses of the liver favorable results can be obtained by means of splenectomy. They agree with Carnot and Harvier, who formulated in 1935 that in these cases it seems to be a question of a primary hepatolienal disease, of a splenogenic hepatic cirrhosis, and that the splenectomy must be considered as a palliative intervention rather than a curative operation. It intervenes especially, if not to suppress completely certain complications, such as hemorrhages, at least to diminish the fatal risks and dangers. These conclusions seem confirmed to the authors by some unpublished observations which they analyze particularly from the point of view of the late results. One case demonstrates that if the spleen is hypertrophic, even if the hepatic cirrhosis develops in the form of an atrophy, splenectomy is likely to produce favorable results as regards the recurrence of hemorrhages of the digestive tract and the general condition of the subject. Two other reported cases concern hepatic cirrhoses which, in the absence of a biopsy at the time of the intervention, appeared not to have developed until after the splenectomy, in spite of a considerable improvement in the general condition of the patients.

Opacification of Gallbladder by Black Bile.—Fiessinger and his associates show that gallbladders which show spontaneous opacity in the roentgenogram and which contain no calculi derive their opacification from two chemical phenomena: either the bile is white and charged with calcium carbonate and calcium phosphate, or the bile is black and charged with calcium carbonate and bilirubinate. The authors review two cases belonging to the second group. In the first case a long clinical history seemed to favor the diagnosis of calculi in the gallbladder. A roentgenogram that was made without preparation showed a round homogeneous shadow. During the intervention, black bile was discovered, which contained several rare small calculi. The second observation is another example of opaque gallbladder of the same nature. The opacity of the gallbladder to x-rays is due in these cases to the abnormal richness of the bile in calcium, which forms a type of sediment and behaves in the roentgenologic examination as does a contrast medium. Most often it is calcium carbonate which determines the white aspect of the bile. If the precipitation is in the form of calcium bilirubinate, the bile remains hyperpigmented, presenting by its color and its consistency the appearance of tar, as was the case in the two reported cases. The authors point out that Bianchi likewise reported two cases of opaque gallbladders with black bile. In all published observations obstruction of the cystic duct existed either by a calculus of cholesterol or, in exceptional cases, by an epithelioma. In the described cases the cystic duct was likewise obstructed. All authors consider this obstruction the cause of the calcareous deposits. The roentgenologic examination, although possible, is not easy. To make a diagnosis, the examination must be made carefully and repeatedly. Bianchi, in a detailed study of this problem, distinguished two different roentgenologic aspects: 1. There is a uniform shadow, more or less dense, reproducing the outline of the gallbladder and perhaps also that of the cystic duct. 2. There is a semilunar opaque outline, which partly reproduces the form of the gallbladder in its lowest portions. From the clinical point of view it is interesting that diagnostic errors are frequent. Most frequent is the diagnosis of vesical calculi. In the first reported case the abnormal shadow, the familial antecedents and the considerable eosinophilia would have made the authors think of the possibility of a hydatid cyst of the liver if the lithiasic symptomatology had not determined the diagnosis.

Presse Médicale, Paris

45: 1019-1034 (July 10) 1937

Hemocholecystitis. N. Fiessinger, A. Bergeret and J. Leveuf.—p. 1019.
*Lobstein's Disease in Thirty-Four of Eighty-Six Members of Five Families. G. Carrière, E. Delannoy and C. Huriez.—p. 1023.
Aspects of Blood in Cirrhosis of the Liver. E. Henhamou and A. Nouchi.—p. 1027.
Electrocardiogram of Arrested Heart. R. Lutembacher.—p. 1031.

Familial Occurrence of Osteopsathyrosis.—Carrière and his collaborators state that their interest in Lobstein's disease (osteopsathyrosis) was first stimulated by a young woman with deep blue scleras, who sustained a fracture of the fifth lumbar vertebra from an insignificant cause. Although the patient was not deaf, she doubtlessly had osteopsathyrosis, because, when her family history was investigated, seven analogous cases were detected. The disorder, which is generally designated as Lobstein's disease, is characterized by the following triad of symptoms: blue coloration of the scleras, fragility of the bones and deafness. In further investigations on this problem the authors detected five families with eighty-six members, of whom thirty-four had signs of Lobstein's disease. They give diagrams of the genealogical trees of these five families. The diagrams clearly demonstrate the heredofamilial character of osteopsathyrosis. The authors state that from the clinical point of view the blue coloration of the scleras is the most important symptom, by reason of its frequency and of the ease with which it can be detected. They observed it in various degrees of intensity in thirty-three of thirty-four patients. However, they think that in order to be a diagnostic sign of Lobstein's disease the blue coloration of the scleras must have a certain intensity, be of a familial character and be associated, at least in one member of the family, with osseous or auditory defects. Further they give their attention to the osteo-articular symptoms of Lobstein's disease, discussing the fragility of the bones, the skeletal deformities and the articular luxations. They say that they detected deafness in seven of the thirty-four patients. Then they take up the endocrine disturbances, which they observed in many members of the five families. They found that the function of the thyroid is frequently impaired in the patients with osteopsathyrosis. All the members of one family had hypothyroidism. In another family myxedema was observed in a woman and her daughter. On the other hand, two of the patients exhibited signs of hyperthyroidism. Ovarian dysfunction, pancreatic disorders and parathyroid disturbances were other signs indicative of endocrine involvement. In answer to the question as to what might cause both the pluriglandular symptoms and the osseous dystrophy, the authors suggest that hereditary syphilis might play a part. The probability of such an etiology is proved by the frequency of the symptoms of hereditary syphilis among the patients. The authors think that, if their hypothesis of the rôle of the glandular disturbances and of the etiologic significance of hereditary syphilis is accepted, endocrine as well as antisyphilitic treatments are justified in the therapy of osteopsathyrosis.

45: 1035-1050 (July 14) 1937

*Physioclinical Studies on Intradermal Injection: Action of Histamine-Histidine Solution. E. Aron.—p. 1037.
Studies on Chemical Modification of Cerebrospinal Fluid After Operations. S. Tzovaru and D. Théodoresco.—p. 1039.

Intradermal Injection of Histamine-Histidine Solution.—A review of the previous literature on the action of intradermal injections revealed to Aron three important points: First, the intradermal injection of all substances at the painful

area has an analgesic action. In discussing this point he directs attention to the observation made by Lenormand; namely, that substances which influence disturbances in the sympathetic nervous system act most intensively when they are injected into the skin. The author thinks that the richness of the skin in sympathetic elements and its common embryologic origin with the nervous system are points which help to explain the therapeutic efficacy of the intradermal injection. The second point stressed by the author is that the intradermal route augments the rapidity and the efficacy of the action of the neurotropic substances (histidine). Third, the intradermal injection of histamine by its special vasodilator effect and by its general action is an efficacious method in the treatment of the pain and the contracture of rheumatic disorders. These points were corroborated by three series of experiments which the author carried on in recent years. He employed a histidine solution of 4 parts in 100, which contained 0.1 mg. of histamine per cubic centimeter. The intradermal injection of this solution is not painful, provided it is rendered neutral or slightly alkaline. The technic is simple. It requires no special needle but a syringe of 1 cc., and needles that are used for subcutaneous injection are sufficient. The needle is placed parallel to the skin and its beveled edge is inserted; when the beveled edge is covered by the dermal membrane, the injection is made. The author never injected more than 1 cc. of solution and rarely gave more than one or two injections at one time. The patient himself usually indicated the painful area of the skin. The total number of injections was from six to twelve. One injection was given either daily or every other day. The results so far obtained encourage the further use of the method on a larger material, which will be necessary for a definite evaluation of the method. The author gained the impression that the combined use of histamine and histidine is more constant and lasting than is the separate use of the substances.

Schweizerische medizinische Wochenschrift, Basel

67: 613-664 (July 10) 1937. Partial Index

Subcutaneous Injury of Pancreas. J. Barth.—p. 614.
Evaluation of Osteoplastic Stiffening of Vertebral Column in Tuberculosis. F. Becker.—p. 615.
Question of Pneumothorax Therapy in Bronchiectasis. A. Brunner.—p. 616.
Traumatic Detachment of Epiphysis at Distal End of Tibia and Fibula. C. F. Geigy.—p. 626.
*Function of Musculature of Renal Calices. O. Hennig.—p. 629.
Roentgen Examination of Surgically Exposed Kidney. H. Heusser.—p. 630.
Symmetrical Hemangioma of Both Feet with Rheumatic Changes. L. Jecker.—p. 633.
*Calcium Prophylaxis of Fatal Postoperative Pulmonary Embolism. E. Muff.—p. 643.

Function of Musculature of Renal Calices.—According to Hennig the function of musculature of the renal calices plays an important part in the circulation of the urine through the renal parenchyma and in the excretory mechanism from the renal canal system. A knowledge of this function is of value for the interpretation of certain pathologic conditions of the urinary apparatus. An accidental observation in the course of a retrograde pyelography proved to the author the sphincter-like action of the ring musculature of the calices. After reviewing Henle's description of the musculature of the renal calices, he says that the action of the ring musculature of the renal calices had never before been observed directly on a living human subject and then he describes his observation of a pyelovenous reflux, which was localized in one calycine system, and of the sphincter-like closure of a renal calix. The roentgenogram of the right, healthy kidney revealed that the ureteral catheter had penetrated into the upper calix. Whereas the median and lower calices showed only rather weak shadows and smooth outlines, the upper calix showed a strong shadow and appeared laced in toward the renal pelvis. In trying to explain this phenomenon, the author points out that by the accidental penetration of the point of the catheter into the upper renal calix the iodine preparation exerted such an irritating effect on the mucosa that the calix was closed against the renal pelvis by reflex of the ring musculature. Before the irritation could become completely effective, a small part of the contrast medium entered the other parts of the hollow system. If the wall of the calix did not contain ring-shaped contractile muscular elements, the contrast medium, according to the laws of hydrostatics, would have spread uniformly through the entire hollow system, so that a shadow of uniform intensity would have been the result. The author thinks that his observation furnished the proof for the existence and lacing in effect of the ring fibers on the renal calices. He suggests that under normal physiologic conditions it is probably the suction of the calix bell which forces the urine stream periodically from the renal canals. The periodic play of the musculature of the renal calices, which is manifested in contraction and suction, was corroborated also by the roentgenograms following intravenous urography. This more physiologic procedure of renal visualization revealed that the muscular action of the renal calices does not take place simultaneously in all calices but alternates from side to side.

Calcium Prophylaxis of Postoperative Pulmonary Embolism. — Muff reports on prophylactic injections of calcium chloride for the prevention of fatal pulmonary embolisms. He says that this treatment was first introduced in Bier's clinic. Two cases of fulminant postoperative pulmonary embolism, which occurred at the author's clinic shortly after Martin had reported on the prophylaxis in Bier's clinic, induced the author to try the calcium prophylaxis. The technic of this method called for the daily subcutaneous injection of 1 cc. of a 0.01 per cent solution of calcium chloride intramuscularly into the thigh or the gluteal muscle; this is less painful than the subcutaneous method of administration. According to Martin's directions the injections are given daily for eight successive days after operations or injuries. If signs of thrombosis or of pulmonary infarct appear, the injections are continued for two weeks. The author illustrates the effectiveness of the calcium prophylaxis in a tabular report which reveals the comparative incidence of embolisms in two groups of over 2,300 surgical cases each. He does not assert that calcium prophylaxis alone will prevent every fatal embolism. However, since the fatal embolus usually originates in a symptomless distant thrombosis, he thinks that a measure which increases the adhesiveness of such thrombi appears valuable.

Clinica Medica Italiana, Milan

68: 367-440 (June) 1937

*Clinical Value of Indicanemia. L. Pinelli.—p. 371.
Perspiratio Insensibilis in Edema. G. Rocchini.—p. 399.
Bronchiectasis and Pulmonary Tuberculosis. G. Giauni.—p. 425.

Clinical Value of Indicanemia. — Pinelli states that the increase of indican in the blood is common in acute and chronic renal diseases and in other diseases in which the kidneys are normal. He found hyperindicanemia in acute diseases of the respiratory tract, chronic and acute liver diseases, diabetes, chronic constipation and grave anemia. In all cases azotemia is normal. The amount of indican in the blood becomes normal as the disease regresses. In acute and chronic nephritis there is hyperindicanemia and normal azotemia. The increase of indicanemia in renal diseases is of poor prognosis, especially if azotemia also increases. The intensity of hyperindicanemia in renal diseases depends on the intensity of renal insufficiency. Uremia is independent of the presence and intensity of hyperindicanemia. The determination of indicanemia during fasting has no specific clinical value in showing pathologic conditions of the kidneys.

Policlinico, Rome

44: 321-368 (July 1) 1937. Medical Section

Bile Salts in Cerebrospinal Fluid in Jaundice. M. Coppo and L. Travia.—p. 321.
Active Immunity in Experimental Infection by Castellanella Gambiensis. A. Castellani and I. Jacono.—p. 325.
Retro-Olivary Bulbar Alternating Syndrome (Wallenberg's): Case. D. Mircoli.—p. 335.
*Short Wave Treatment in Disturbances of Gastric Secretion. E. Benassi and L. Montagnini.—p. 353.

Short Wave Treatment in Disturbances of Gastric Secretion. — Benassi and Montagnini applied a local short wave treatment to nineteen patients suffering from disorders of the gastric secretion. During administration of the treatment no medicine was given and the patients followed their usual habits of life and diet. The modification of the gastric secretion was determined at intervals in the course of treatment and, in some cases, after discontinuation of the treatment. The waves were 6 meters long, of a modulated type and average intensity, which produced a slight feeling of local warmth.

The electrodes (12 by 18 cm. and 27 by 18 cm., respectively) were applied at opposite points at the epigastrium and the back in order to include the stomach in the electric field. The treatments were given daily, on a fasting stomach or at a time remote from meals. Each treatment lasted thirty minutes (except in the cases in which the condition of the gastric secretion, such as changes induced by the treatment, were verified during one of the applications). The number of treatments varied from twelve to fourteen. In all patients the treatment controlled pain and regulated the gastric secretion, which decreased in hyperchlorhydria and increased in hypochlorhydria. The effects were lasting. In some cases the treatment induced a complete clinical cure. The authors state that the mechanism of action of the short wave treatment on the motor and sensory phenomena of the stomach is complicated. The action takes place especially through the sympathetic. Local hyperthermia and the stimulation of local nerve fibers are secondary factors.

44: 1385-1428 (July 19) 1937. Practical Section

*Intraspinal Anesthesia and Prevention of Following Headache. M. Margottini.—p. 1385.
Fever of Malarial Type in Syphilis Associated with Chronic Malaria. A. Spanu and M. Piga.—p. 1397.

Spinal Anesthesia.—According to Margottini, spinal anesthesia with a 10 per cent solution of procaine hydrochloride is the method of choice in performing all operations in structures lower than the diaphragm. It is not advisable to resort to this type of anesthesia in children less than 13 years of age. It is contraindicated in persons with low blood pressure, as well as in those suffering from toxic conditions, infections, circulatory disorders, syphilis and headache. The intraspinal injection of 12 or 16 cc. of a 1 per cent solution of dextrose shortly after the intraspinal injection of procaine hydrochloride greatly reduces the frequency, intensity and duration of headache following intraspinal anesthesia. The author's conclusions are based on results of 3,500 cases in which procaine hydrochloride intraspinal anesthesia was used.

Prensa Médica Argentina, Buenos Aires

24: 1331-1376 (July 7) 1937

Exophthalmic and Toxic Goiters in Pregnancy. A. Peralta Ramos, M. Schteingart and Ida C. de Urison.—p. 1331.
Acute Osteomyelitis of Calcaneum. M. Cieza Rodriguez.—p. 1338.
Plans for Studies on Effects of "Mate" Tea. F. L. Soler.—p. 1341.
Auriculoventricular Dissociation by Interference: Case. G. Segura, J. E. Israel and J. Ferretti.—p. 1344.
*Appendicitis from Oxyuris. A. Battaglia and H. di Fiore.—p. 1349.
Hay Fever in City of Bahia Blanca. L. G. Bouzat.—p. 1359.

Appendicitis from Oxyuris.—Battaglia and di Fiore found appendicitis caused by Oxyuris with a frequency of 2 per cent. It is more frequent in children than in adults. Only two patients out of a group of eleven suffering from oxyuris appendicitis complained of symptoms of oxyuriasis (occasional dizziness with unconsciousness). A microscopic study of the removed appendix was performed in three cases. The appendix was the seat of chronic inflammation and typical oxyuris lesions. The hemogram in three cases showed eosinophilia (4, 5 and 8 per cent, respectively). The appendix was intensely parasitic (twenty-nine, sixty-two and eighty-three oxyurids, respectively). The largest number of oxyurids isolated from the appendix were female. The examination of the feces for parasites and of the lumen of the appendix for eggs gave negative results.

Archiv für klinische Chirurgie, Berlin

188: 391-566 (June 14) 1937. Partial Index

"Progressive Staphylomycosis" of Face, or So-Called Staphylococcic Erysipelas of Face. H. Behrendt.—p. 391.
*Chorionepithelioma in Males and Its Hormone Action. G. Bankoff.—p. 402.
Echinococcus Disease in Greece. H. Toole.—p. 459.
*Impairment of Blood Vessels by Continuous Concussions as Result of Work with Pneumatic Tools. H. Junghanns.—p. 466.
Clinical Aspects of Dissecting Aneurysm of Aorta. W. Block.—p. 480.
Hypothesis Regarding Incretion of Hassal's Bodies in Connection with Cancer Problem. S. Kambosseff.—p. 490.
*Sacralization of Fifth Lumbar Vertebra and Its Clinical Significance. O. Wenzl.—p. 493.

Chorionepithelioma in Males.—Chorionepithelioma in males, Bankoff states, is usually localized in the testicles or in testicular teratomas; the extragenital localization is probably only apparent or at least extremely rare. The histologic aspects of the chorionepithelioma in males correspond morphologically with those of the chorionepithelioma in women. In its behavior toward the general organism, the chorionepithelioma of males likewise resembles that of women. The author describes the history of a man, aged 27, in whom a chorionepithelioma was removed from the right testicle. The patient recovered and as yet there have been no signs of metastasis. The author concludes that there is a morphologic similarity between chorionepithelioma in men and in women. However, this similarity is no proof that these tumors are of the same type, for it is known that tumors with the same histologic aspects may be of different origin. In support of the hypothesis that chorionepitheliomas are of different nature in men and in women, the following characteristics are cited: The teratomatous chorionepithelioma occurs only in men and always in the testicles; the entire tumor is of a malignant nature and free from benign elements; in contradistinction to the tumors in women, the metastases of the chorionepithelioma in men appear almost exclusively in the retroperitoneal lymph nodes; combinations of chorionepithelioma with other types of testicular tumors as well as a direct transition of chorionepithelioma-like structures into adenocarcinomatous proliferations are demonstrable only in men. The author arrives at the hypothesis that chorionepithelioma originates like all other testicular tumors in the testicular parenchyma. Its anatomic structure proves to a certain extent that its syncytial cells originate from Sertoli's cells.

Impairment of Blood Vessels by Pneumatic Tools.—It is pointed out by Junghanns that the literature of recent years brings isolated reports of cases of vascular disturbances in the hands of workers who for years have handled pneumatic tools. He himself describes observations on a man, aged 38, who for eleven years had operated a pneumatic hammer. He concludes that workers whose hands are exposed to continuous concussions from the operation of pneumatic tools gradually develop a traumatic angioneurosis of the capillaries of the fingers. This angioneurosis manifests itself in pallor of the fingers, a feeling of deadness, impaired movement, and disturbances in the sense of touch and sensitivity to cold. In rare cases these vascular disturbances, which appear at first in the form of spasms, may become so exacerbated on the fingers, hands and lower part of the arms that local tissue death results (wounds heal poorly and the tips of the fingers or the fingers become gangrenous). Histologic studies on the blood vessels of the lower part of the arm of the patient whose history is reported revealed changes similar to those of Bürger's endangiitis obliterans (closure of the vessel by connective tissue plugs, separation of the layers of the vascular wall, tubercle-like accumulations of cells with giant cells, and so on). The author suggests that this form of vascular disease should be recognized as an occupational disease, just like the impairments of muscles, bones and joints that develop in workers who operate pneumatic tools. Workers in whom the beginnings of such disturbances are noticed should discontinue their work with pneumatic tools. At any rate, it is advisable that such work which involves continuous concussion should be done only for a few hours each day and, if possible, the workers should be relieved from it completely for several months out of the year.

Sacralization of Fifth Lumbar Vertebra.—Wenzl admits that persons with sacralization may go through life without having the least difficulty from it and that some cases of sacralization are discovered only by accident. The fact that some persons with sacralization are entirely free from pains has induced some authors to reject completely all connection between sacralization and backache. Nevertheless, many recognize that sacralization is the cause of many otherwise unexplainable disorders. To clarify the symptoms that are caused by sacralization, the author analyzes a so-called sciatica complex and a skeletal complex. He describes several cases. He designates as the skeletal complex those static disturbances which develop as the result of the vertebral changes in sacralization. The neuralgiform pains, the sciatic complex, is often the result of the simultaneous increase in the thickness of the transverse process. To this group belong relapsing sciatica cases in which the roentgenoscopy fails to reveal sacralization. In most cases of sacralization the two complexes are combined. The author thinks that, whenever symptoms can be traced

with certainty to sacralization, surgical is preferable to symptomatic treatment. He shows that the operation, namely, the excision of the transverse process, is not difficult and can be performed without great risk for the nerve. After the operation the patients should be put in a suspended position, which makes possible a lordotic position in the region of the lumbar portion of the vertebral column. After three weeks the patients usually can get up again.

Klinische Wochenschrift, Berlin

16: 937-976 (July 3) 1937. Partial Index

Experimental Contribution to Pathophysiologic Analysis of Hypophysial Disturbances. M. Reiss.—p. 937.
Regulation of Carbohydrate Metabolism During Athletic Activities. F. Meythaler.—p. 951.
Change in Hemostatic Pressure and Arterial System. R. Immel. —p. 956.
Histamine Content of Skin After Ultraviolet Irradiation. B. Tarras-Wahlberg.—p. 958.
*Protection Against Light by Combination of Vitamin C and Oil of Bergamot. E. Urbach and F. Kral.—p. 960.
New Phenomenon as Indication for Surgical Treatment of Pelveoperitonitis. H. Knaus.—p. 963.

Vitamin C and Oil of Bergamot for Protection Against Ultraviolet Rays.—Urbach and Kral describe experiments which prove that the oral, rectal or parenteral administration of vitamin C in combination with the external application of oil of bergamot has a definite photoprotective effect. However, in order to protect the skin against ultraviolet rays, it is necessary that vitamin C form a chemical compound with the entire complex of oil of bergamot. Vitamin C acts most rapidly after intravenous administration, for if so administered it becomes effective after one hour, as against three hours in oral administration. This indicates that not the vitamin as such but rather one of its products protects against light rays. Moreover, if vitamin is rubbed into the skin, it does not prevent the ray erythema. It is noteworthy that only natural but not rectified oil of bergamot protects against light. Even heating to more than 60 C. cancels the effectiveness of the oil against ray erythema and none of its constituents exert the photoprotective action. Moreover, the combination of vitamin C and oil of bergamot protects only against short, not against long, light waves.

Münchener medizinische Wochenschrift, Munich

84: 1041-1080 (July 2) 1937. Partial Index

*Fresh Air Treatment of Bronchopneumonia in Children. R. Degkwitz. —p. 1043.
*Stuporous Conditions After Insulin Shock Treatment of Schizophrenic Patients. H. Salm.—p. 1046.
Surgical Aid and Passive Protection in Aerial Warfare. Kreuter.—p. 1049.
Clinical Aspects of Gas Edema. H. Busse.—p. 1052.
Physician Without Pharmacy. E. Mader.—p. 1053.
Functional Impression of Foot and Its Use in Disturbances of Static Nature. A. Lettermann.—p. 1060.
Occurrence and Epidemiologic Significance of Diphtheria Bacillus Carriers Among Immunized and Nonimmunized Children. E. Bender.—p. 1062.

Fresh Air Treatment of Bronchopneumonia in Children.—Degkwitz discusses the mortality rate in two groups of children who contracted bronchopneumonia. The first group comprised 334 cases which were treated during the time when the fresh air treatment was not yet used. In the second group of 424 children, the fresh air treatment was used. The ages of the children, the percentage of severe cases and the incidence of complications were about the same in the two groups. Identical also were certain indispensable nursing and medicinal measures. However, whereas the first group was treated in ordinary wards, the second group received fresh air treatment in open-air verandas or in open-air rooms (with open windows and unheated) or the children were changed back and forth between the open-air veranda and steam-saturated warm air (steam bed, bronchitis box), and they were not constantly left in bed but were carried around much. Children who died within the first two days after hospitalization were not included in either of the two groups. In discussing general indispensable measures that are required in pneumonia, the author stresses the importance of correct bedding (horizontal position with a flat pillow or roll under the shoulders), so that the respiratory musculature can function properly. In the second group this position was alternated for brief periods with the lateral position. Moreover, the children were frequently carried around in the open air (usually in the sitting position). The author further stresses the necessity of supplying the children with adequate amounts of fluid and of carefully watching the circulation. In discussing the mortality, he points out that nurslings and small children die more frequently of pneumonia than does any other age group. However, a comparison of the mortality rates in the two groups of children proved that in the group in which the open-air treatment and the more active measures (carrying around) were used the mortality was reduced to one third of the rate that occurred in the children receiving ordinary ward treatment.

Stuporous Conditions After Insulin Treatment in Schizophrenia.—Salm describes stuporous conditions which developed in schizophrenic patients who underwent the insulin shock treatment. The symptoms were generally continuous stupor in spite of the administration of large amounts of sugar, lack of energy, somnolence, vomiting and occasionally fever (up to 104 F.). In some instances the stupor was preceded by a number of attacks, which continued in spite of the administration of large amounts of sugar and could be controlled only by hypnotics. The stuporous conditions may appear even if the shock is not unusually deep and lasting, and the quantities of the injected insulin differed likewise in the cases in which stupor followed. One patient died after eleven days of stupor. The author cites similar cases from the literature and, in attempting an explanation, expresses the opinion that the hypoglycemia elicits lesions in the diencephalic regions, which in turn produce disturbances in the heat regulation and in the circulation and perhaps severe sweating. If the hypoglycemia causes severe damage, stupor and somnolence may result. These cases constitute a serious problem because, if they do not yield to the repeated administration of sugar, it is useless to administer more carbohydrates, particularly if the blood sugar value is high. The circulation should be carefully watched, for if the pulse and the general condition remain favorable the patient usually wakes from the stupor.

Wiener medizinische Wochenschrift, Vienna

87: 745-786 (July 10) 1937. Partial Index

Specific Action of Ultra High Frequency Field. W. M. Archangelsky. —p. 746.
Biologic and Therapeutic Action of Hertzian Waves 80 Cm. in Length. A. Dénier.—p. 748.
Fever Therapy of Gonorrhea. S. Gottesmann and E. Last.—p. 749.
Short Wave Therapy and Diathermy. R. Kovacs.—p. 754.
*Short Wave Therapy in Articular Diseases. V. Maragliano.—p. 756.
Historical Sketch of Development of Short Wave Therapy. J. W. Schereschewsky.—p. 769.
*Short Waves: Mode of Action and Indications for Use. E. Schliephake. —p. 771.

Short Wave Therapy in Articular Diseases.—Maragliano employed short wave therapy in about 100 cases of articular disorders. The short waves were employed to obtain a thermic effect. The treatment was nearly always local. In applying the rays to the large joints, the body temperature was usually slightly raised. It was observed that the best results could be obtained when the patients were kept resting after the treatment. Accordingly, the treatment was most effective with hospital patients. In some instances acute exacerbations were observed after the first few treatments, but these subsided again and it appeared as if the incipient exacerbation indicated a favorable final result. The response to short wave treatment was most favorable in the traumatic articular processes, such as the sequels of distortions, of luxations and of endo-articular or periarticular fractures. In the articular disorders of metabolic origin, such as gout, the short wave therapy produced varying results; for whereas some cases responded favorably, others were not improved or were even exacerbated. In the metabolic articular disorders as well as in the chronic polyarthritides it may be advisable to combine the local treatment with general treatment, the aim of the latter being a slight increase in the body temperature. Short wave treatment of arthritis deformans produced only a temporary reduction in pain. An analgesic effect was produced also in the gonorrheal arthritides. The author treated only one case of tuberculous arthritis with short waves and in this case the treatment failed. The combination of short wave and roentgen therapy proved helpful in counteracting the pains in arthritis deformans.

Short Waves: Mode of Action and Indications for Use. — Schliephake discusses the indications for short wave therapy and its technic. He deplores the uncritical reports which represent the short wave therapy as a cure-all, thereby bringing it into disrepute. He regards as one of the chief indications for short wave therapy a group of suppurating inflammations, particularly furunculosis, carbuncles, panaritiums and some empyemas. The particular value of the short wave therapy lies in the fact that the infectious foci are localized. During the early stage, resorption is usually obtained; during the later stage, demarcation and spontaneous perforation. Regarding the use of ultrashort waves in chronic conditions, the author says that it is indicated in practically the same conditions as is diathermy. He also mentions the production of fever by means of the short wave field, pointing out that at his institute this treatment was used chiefly in rheumatic conditions. He stresses that excessive doses must be avoided. He thinks that the more acute the process, the smaller should be the dose and the shorter should be the time of exposure to the short waves. In giving his attention to the action mechanism, he points out that much confusion has been produced by the discussion about thermic effects versus specific effects. He says that if there are specific effects they can be produced only by physical processes; for instance, electrical powers may influence the structure of molecules or of colloidal particles, but in such processes there is always also a thermic effect.

Polska Gazeta Lekarska, Lwów

16: 567-590 (July 18) 1937

Puncture and Incision of Posterior Fornix of Vagina. S. Maczewski. —p. 567.
New Opinion on Process of Tuberculosis and Its Dependence from Local and General Specific Immunization. K. Lewkowicz.—p. 569.
Liquid Nutrient Medium with Cotton for Anaerobic Bacteria Culture. A. Ławrynowicz.—p. 573.
Vitamins as Nonspecific Remedy. H. Halpern-Wieliczański.—p. 573.
*Synthetic Cevitamic Acid New Auxiliary Remedy in Arsphenamine Therapy. S. Landfisch.—p. 575.

Synthetic Cevitamic Acid in Neoarsphenamine Therapy. —Landfisch states that, notwithstanding the great improvements in the preparation of neoarsphenamine, it often happens that for various reasons the physician has to interrupt the treatment with neoarsphenamine. Various auxiliary preparations have been tried with the view of creating greater tolerance to neoarsphenamine in the patient but have failed to produce the desired result. He has treated twenty-five patients, to whom a neoarsphenamine preparation could not be administered safely, with synthetic cevitamic acid in ampules in doses of 0.05 Gm. dissolved in 10 cc. of water and in tablet form for oral administration. The cevitamic acid injections have been given together with the neoarsphenamine injections or half an hour before administration of the neoarsphenamine. The tablets, three a day, were given one day before administration of neoarsphenamine or on the same day. The following results were obtained: Among the twenty-five patients, twelve male and thirteen female, the evidence of intolerance disappeared in eleven male and nine female, or 80 per cent; slight and insignificant intolerance symptoms were observed in four female patients, or 16 per cent, and one male patient remained intolerant, or 4 per cent. On the basis of this experiment, he concludes that the auxiliary remedy of synthetic cevitamic acid for intolerance in neoarsphenamine therapy is worthy of further consideration.

Hospitalstidende, Copenhagen

80: 657-684 (June 15) 1937

*Treatment of Cryptorchidism with Gonadotropic Substance. E. Dahl-Iversen and U. Starup.—p. 657.
*Intracranial Angioma: Case. C. Johansen.—p. 671.
Renal Rickets: Case. J. Bichel.—p. 678.

Treatment of Cryptorchidism with Gonadotropic Substance.—Of 208 cases of cryptorchidism treated with endocrine preparations collected from the literature in which exact statements of the results were given, complete descent with growth of the testicles was attained in 129 cases (62 per cent), growth of the testicles with partial descent in twenty-five (12 per cent), and in fifty-four (26 per cent) the location of the testicles was unchanged, although in some the size was increased. The last group included patients who were between 20 and 30 years of age or who had previously undergone unsuccessful orchiopexy or inguinal herniotomy. Of the 155 cases known to be unilateral or bilateral, good results were achieved in forty-three (66 per cent) of the bilateral cases, improvement in eleven (17 per cent) and negative results in eleven (17 per cent), while forty-five (50 per cent) of the unilateral cases showed good results, nine (10 per cent) were improved and thirty-six (40 per cent) gave poor results. Dahl-Iversen and Starup's experience has also been that bilateral cases react better to endocrine treatment than do the unilateral. The hypothesis is thus supported that unilateral retention depends on a mechanical obstacle to descent, while the bilateral depends on hormone disturbances. Further, endocrine treatment gave good results in seventy-two (76 per cent) of the ninety-five patients with general physical underdevelopment or genital underdevelopment or with clinically established endocrine disturbance, fourteen (15 per cent) showed improvement and only nine (9 per cent) failed to respond to the treatment. The authors conclude that endocrine treatment is superior to operative treatment. The contraindications are true ectopies, retention complicated with hernia, cases with annulus subcutaneus complicated with hydrocele, possibly in combination with open vaginal process, cases in which examination reveals a fixation of the testicles or narrow annulus subcutaneus, or in which there is other demonstrable cause for the maldescent and, finally, in which malignant change of the testicles may be suspected. According to present experience, they would not begin endocrine treatment till the age of 12 or 14. A universal endocrine disorder may indicate an earlier beginning of treatment. A dosage of 400 mouse units of the luteinizing factor twice weekly is recommended, under close control of the patient's development, both general and genital, and in cases of unilateral retention, with attention to the possibility of atrophy of the normal testicle, a condition about which little, however, is known. They use the luteinizing factor from the urine of pregnancy because this principle is believed to act preeminently on the Leydig cells, assumed to play the most important part in descent of the testicles. In their material the duration of treatment has been from about six weeks to about nine and a half months.

Intracranial Angioma.—Microscopic examination showed that Johansen's case of intracranial hemorrhage following a slight trauma was due to rupture of an intracranial angioma racemosum.

80: 685-712 (June 22) 1937

Applicability of Distinction Ability in Clinical Estimate of State of Nutrition with Regard to Vitamin A. E. Groth-Petersen.—p. 685.
*Symptomatic Steatorrhea in Carcinosis Diffusa and Puerperium. E. Lundsteen.—p. 698.
Osteogenesis Imperfecta Congenita with Atypical Roentgenogram: Case. E. Ruhwald.—p. 707.

Symptomatic Steatorrhea in Carcinosis Diffusa and Puerperium.—Lundsteen describes two cases of steatorrhea resembling Gee-Thaysen's disease. In the first, necropsy revealed a carcinosis in the small intestine and in the peritoneum. In the second, which began in the puerperium after a normal pregnancy, there was a grave hyperchromatic anemia; treatment with liver and stomach preparations together with blood transfusion resulted in recovery.

Hygiea, Stockholm

99: 433-480 (June 30) 1937.

*Studies on Etiology of Infectious Mononucleosis. A. Nyfeldt.—p. 433.
Disinfectants in Irrigation of Bladder. J. Hellström.—p. 457.

Etiology of Infectious Mononucleosis.—Nyfeldt says that the Listerella group is pathogenic to both man and animals and, in addition to their morphologic, cultural, fermentative and serologic relations, the bacteria are characterized particularly by the mononucleosis they induce in man and animals. According to the fermentologic spectrum, the Listerella strains are divided into three types: (*a*) Listerella cuniculi Murray and Listerella hominis C. P. M. H. Nyfeldt, (*b*) Listerella Pirie, Listerella Jones and Little, Listerella hominis Schultz and (*c*) Listerella gallinaria Ten Broeck. The Listerella bacteria are often overlooked because of the difficulty in their cultivation, but culture on a suitable substrate and patience on the part of the investigator will show that they are far from rare. Continued serologic investigations are in progress.